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OFFICIAL PUBLICATION OF THE PROCEEDINGS AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

AMERICAN

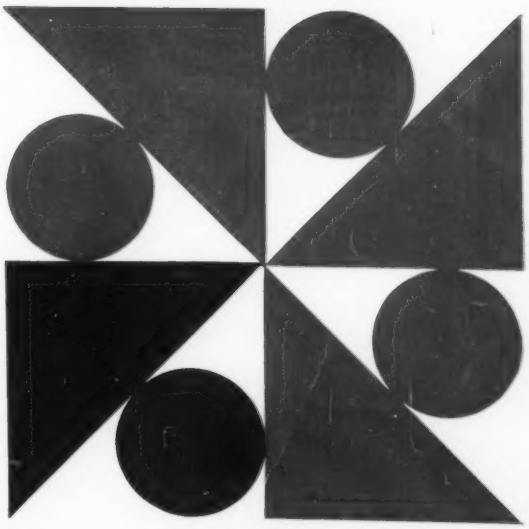
DYESTUFF REPORTER

TEXTILE WET-PROCESSING

CIBA

YOU...
1961...
and CIBACRON
Dyes

As always we stand ready to share your responsibility to the industry. It is so vital that the various segments of our industry work more closely than ever before to upgrade quality and at the same time protect the difficult profit margin. CIBA . . . so acutely aware of and geared to the PROFIT - QUALITY - DELIVERY - SERVICE objective . . . belongs in your day-to-day operation. From CIBA come dye developments to meet the range of new fashion-right color effects for any season . . . for example, the range of CIBACRON® Dyes already hard at work for you.



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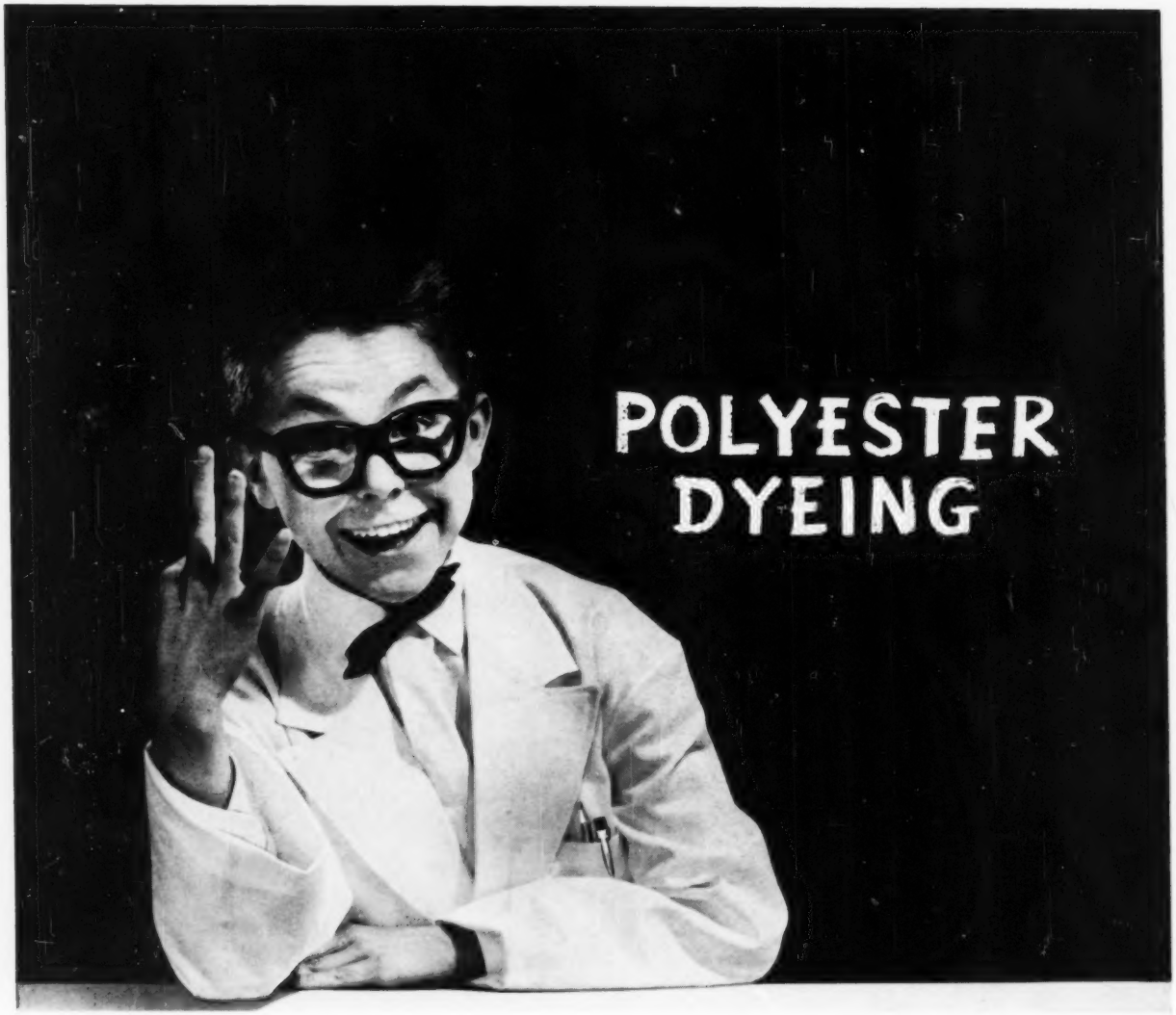

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TANAPON X-70 REMOVES MORE FATTY EXTRACTABLES FROM GREIGE GOODS THAN SOLVENT SCOURS.

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OLD CONCORD ROAD • CHARLOTTE, NORTH CAROLINA

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A NEW STANDARD IN FINISHING COTTONS AND COTTON BLENDS

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WASH AND WEAR PERFORMANCE *without* WASH AND WEAR PROBLEMS

★ IMPARTS SUPERIOR CRUSH RESISTANCE
★ DOES NOT RETAIN DAMAGING CHLORINE AFTER COMMERCIAL OR HOME LAUNDERING
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RESIPON N D C eliminates the major bug-a-boo of wash and wear finishes.....ODOR and CHLORINE RETENTION which causes loss of tensile strength after laundering.

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Made for Nylon...

And Arnel, too, for that matter. As well as rayon-acetate, and other synthetics.

What's made for them? Becco's Peracetic Acid, of course. It's perfect for bleaching many synthetics, since you get good clear whites with practically no reversion during heat-setting operations. You'll find Becco Peracetic Acid minimizes reversion in storage, too.

We say "many" synthetics, because we can't list them all here. If you're having trouble bleaching any particular one, why not write us? We'll tell you what we've done to date, and what we might be able to work out for you.

If you're finishing nylon, start off by getting your free copy of Becco Bulletin No. 60—"Successful Bleaching of Types 670 and 200 Nylon with Peracetic Acid."

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1. Comprehensive survey of your facilities.
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Can you use this free Becco help, based on more years of experience with bulk handling of H_2O_2 than any other manufacturer? Use the coupon to let us know.

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Becco Chemical Division
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No. 29 – Hydrogen Peroxide Dry-In Process for Bleaching Wool.

No. 35 – Modification of Wool with Peroxygen Compounds.

No. 43 – Treatment of Cellulose and Cellulose Derivatives with Peroxygen Compounds.

No. 52 – Bleaching with Some Peroxygen Chemicals.

No. 53 – Fluorescent Agents in Peroxide Bleaching of Knit Goods.

No. 60 – Successful Bleaching of Types 670 and 200 Nylon With Peracetic Acid.

No. 61 – Knit Goods Bleaching Range.

No. 71 – Continuous Bleaching of Cottons with Silicate-Free Peroxide Solutions.

No. 75 – Oxidation of Dyes On Cottons and Synthetics with Peroxygen Chemicals.

No. 88 – Progress in the Art of Bleaching.

What's a PEROXYGEN?

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How come? Well, years of experience in producing Hydrogen Peroxide has produced an affinity between Becco and oxygen — an affinity we have capitalized on to give you compounds that will provide a ready source of oxygen — wherever, however and whenever you need it.

We have a good number of such compounds on the shelves. Quite a few others are in development. Still others are merely in our minds, but we can begin drawing them out if you're interested.

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"We dyed half a million yards this week... with no rejects!"

So reports a new user of Becco Silicate-Free Bleaching Process,* who previously suffered up to 25% rejects.

When complex silicates of calcium and magnesium formed scale on equipment and left resistant residues in the cloth, a Becco Sales Engineer studied the situation, and recommended Silicate-Free Hydrogen Peroxide bleaching solutions which eliminated the problem.

Silicate-Free bleaching won't answer **every** textile bleaching problem. But chances are one Becco process or another **will.** If you need help, use the coupon below to request a Sales Engineer's call. Also, ask for your free copy of Bulletin No. 71, "Continuous Bleaching of Cottons with Silicate-Free Peroxide Solutions".

*U.S. Patents 2,740,689 and 2,820,690

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☐ Please send a free copy of Becco Bulletin No. 71.

☐ Please have a Sales Engineer call.

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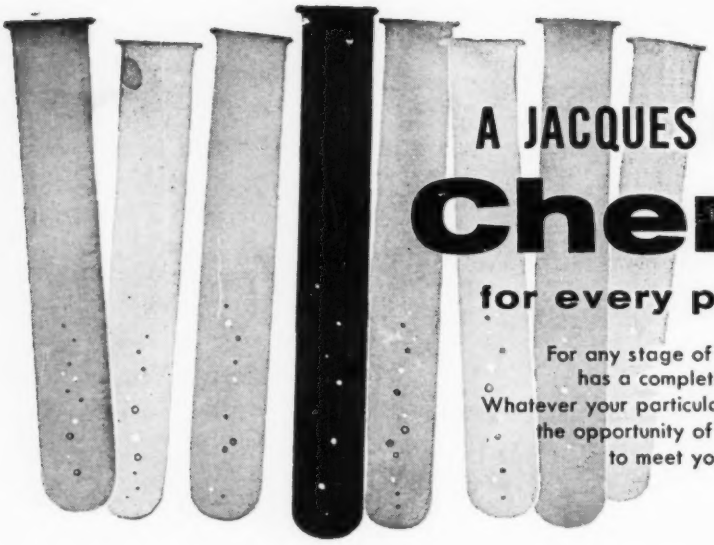

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HYDROZIN®—($Zn(HSO_2.CH_2O)_2$) For stripping acetate dyes and discharge printing on acetate dyed grounds.
HYDROSULFITE QD—For rapid dissolving in continuous vat dyeing.

DE-SIZING

AMPROZYME®—For liquefaction of starches and proteins in de-sizing textiles.
DIASTAZYME®—Used as an economical de-sizing agent for starch-sized textiles.

SCOURING

ORATOL® L-48—A synthetic detergent with excellent penetrating and emulsifying properties.
BENSAPOL—A liquid detergent derived from Monopole Oil particularly useful for scouring wool.
LOUPOLE W-950—A penetrating detergent for use in scouring or boiling off.
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SELLOGEN® GEL—A synthetic detergent used also in dyeing and as a wetting agent for all natural and synthetic fibre.
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WETSIT* NI—100% non-ionic wetting agent.
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DILEINE® SERIES—An amino concentrate for the prevention of atmospheric gas fading on dyed acetate fibers.
MELEINE® SERIES—Complex organic nitrogenous compounds used on finishes to protect acetate dyed fabrics from atmospheric gas fading.
STATLESS—Paste for reducing static on all fibres.
CREAM SOFTENERS—In different strengths and varied degrees of alkalinity for a soft full hand to all types of fabrics.
LUPOMIN®—A series of cationic nitrogen compounds used for softening and finishing textiles.
CHAFE REMOVER W-545-T—A finishing oil for textiles, particularly silk fabrics, to remove chafe marks.
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SOLUBLE WAX JB—A dispersed vegetable wax for full body and high luster to cotton goods.
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colors offer these
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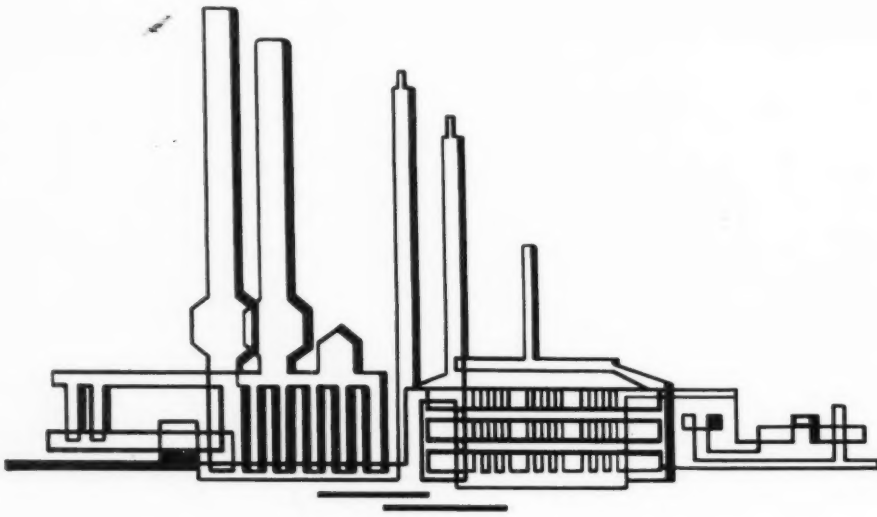

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3 IDEAL LEVELING AGENTS FOR VAT DYESTUFFS

CASSOPAR SR

• Controls the exhaustion speed • retards the sodium leuco compound at low dyeing temperatures • gives leveling effect when temperature is increased • gives complete exhaustion of dyebath when normal dyeing temperature is reached

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• Strongly reduces the exhaustion speed of the sodium leuco compound in addition to increasing the migration ability • gives excellent leveling properties especially for pastel shades • enables full exhaustion of dyebath during normal dyeing process

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• Levels without retarding by increasing migration ability • accelerates vatting speed and gives better fixation • Materially increases solubility giving improved vat stability and better fastness properties to deep shades • levels faulty dyeings • enables high temperature dyeing of blues

Our Technical Staff will be glad to assist you in the proper selection and application of these fine leveling agents.

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A staple in textile manufacturing, NEKAL NF is an anionic liquid known for high quality and all-round efficiency as a wetting and penetrating agent. The news is: *the wetting ability of Nekal NF has been stepped up 50%* with no loss of efficiency in these other important directions...

- *chemical stability to alkalis, acids, hard water, etc.*
- *compatibility with the various dyestuffs*
- *level dyeing characteristics*
- *low foaming properties*

Nekal NF, an alkyl naphthalene sulfonate, may be used with confidence in continuous padding and long-liquor dyeing with vat, sulfur, and direct colors...also in package, beam, hosiery, jig, and other types of dyeing operations on various yarns and fabric constructions.

For further information and samples, get in touch with any General Dyestuff Company office.

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A DIVISION OF

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Nekal wetting agents manufactured by General Aniline & Film Corp. are sold outside the United States, by distributors all over the world, under the trademark "Humifen."®

Eastman now offers textile finishers 3 basic types of polyethylene

New EPOLENE resins enable textile chemists to formulate broader range of softeners

The wide range of properties now available in Eastman's Epolene series provides greater flexibility in formulating polyethylene emulsions for softening "wash and wear" cottons and synthetics, and for textile lubricants and sizes.

Permanent, low in color, non-chlorine retentive and easy to prepare, emulsions based on Epolene polyethylene give you a practical and economical method for improving the hand, abrasion resistance and tear resistance of "wash and wear" treated fabrics.

With Epolene, you can prepare any kind of emulsion system, cationic, anionic or non-ionic, with solids contents of up to 40%.

Choose from three different low-molecular-weight resins to obtain the right emulsion properties and finishing characteristics for your equipment and service.

Epolene E is the highest-molecular-weight resin of the three. It produces stable, low-color emulsion systems of superior quality for use in softening cottons or synthetics, or as a lubricant to reduce needle-cutting and increase sewability. Like other Epolene resins, it needs no curing, lasts through repeated launderings and resists dirt pick-up and redeposition.

Epolene LVE, a new resin type, has a lower melt viscosity than has Epolene E, thus offering somewhat better handling characteristics. Epolene LVE is softer than other resins in the series. The stability of its emulsions in the presence of resin catalysts is outstanding, especially at the low end of the pH scale, as indicated by its relatively high HLB factor.

Epolene HDE is the first high-density, emulsifiable low-molecular-weight polyethylene on the market. Because it is much harder, it improves significantly the abrasion resistance and tear resistance in cotton and cotton blends. Its stability and permanence are excellent. It, too, offers easier handling characteristics during emulsion preparation because of its low melt viscosity.

If you are formulating polyethylene softeners and would like to produce stable, economical emulsion systems of superior all-'round characteristics, look to Epolene from Eastman. Let us introduce you, also, to new time-saving and cost-cutting emulsifying techniques developed at our textile laboratories. For more information on the formulating and performance advantages of these superior polyethylene resins or for specific formulating assistance, write your nearest Eastman office. We invite your inquiry.

Property	Epolene E	Epolene LVE	Epolene HDE
Molecular Weight	2500	1500	1500
Density	0.938	0.939	0.956
Ring and Ball Softening Point, °C. (ASTM D-36-26)	104-108	104-105	110-111
Penetration Hardness (100 g./5 sec./77°F., tenths of mm.)	2	5	1
Color (liquid), Gardner scale, max.	2	2	2
Brookfield Viscosity (cps. @ 120°C.)	1500	400	455

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; Atlanta; Chicago; Cincinnati; Cleveland; Detroit; Framingham, Massachusetts; Greensboro, North Carolina; Houston; New York City; Philadelphia; St. Louis. **West Coast: Wilson Meyer Co.,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.

Epolene

EASTMAN low-molecular-weight polyethylene resins

Why try to do it all yourself?

- Antimony Lactate
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- Flameproofers
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- Hygroscopic Agents
- Kier Boil Assistants
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- Mordants
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- Softeners
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- Weighters
- Wetting Agents

In this rapidly changing field of fibers, blends and techniques, can you really do it all yourself and make money?

APEX does not have all of the answers to wet processing problems, but we do have an experienced, diversified staff of technicians and trouble shooters.

To the dyer or finisher who wants some outside help, we offer our services and experience.

APEX has been developing new and improved products for textile wet processing for a long time . . . ever since 1900.

Perhaps our staff of specialized organic chemists, equipped with modern laboratory apparatus, can give you a fresh and independent approach.

Write or phone and give us a try . . . we think APEX can help you to make a profit.

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Thermoprint

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Dry cure (Thermosol) processing of disperse color prints on polyester fabrics presents no problem to the printer who uses this new Thermoprint Carrier. Printed fabrics submitted to a minimum of 300°F for 5 minutes will indicate a brilliance and sharpness of mark which prior to this development have been difficult to obtain.

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Baby your goods...scour with QUADRAFOS

When QUADRAFOS® is added to scouring waters you can be confident that wools, cottons or synthetics will come out clean.

QUADRAFOS softens water to the correct degree but holds sludge, scale, scum and earth metals in suspension. And, QUADRAFOS gives you more than your money's worth in sudsing performance of soap and synthetic detergents. It increases detergency.

QUADRAFOS solubilizes lime soaps, ensuring the material will be uniformly penetrated by a dye liquor.

Send for a sample today and find out the benefits of babying your fabrics — with QUADRAFOS.

Makers of Rumford Sequestering and Scouring Agents • Rumford Printing Gums
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Rumford Acids

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We would like to test QUADRAFOS in our wool scouring. Please send us a working sample (underscore bead, powder, or granular) with instructions. (If lower pH or higher P_2O_5 content is wanted, try METAFOS®.)
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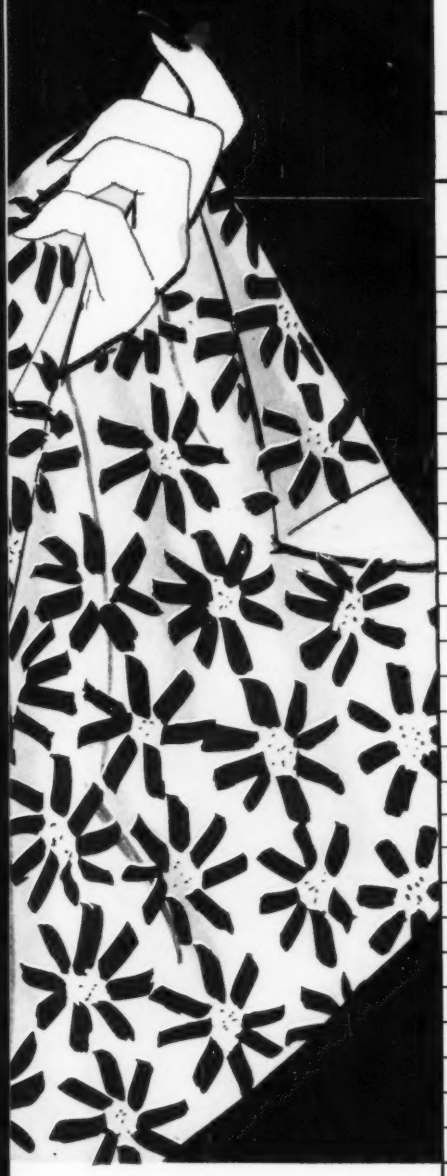
NEW test results on drycleanability

TO CUT COMPLAINTS of color loss in drycleaning the A.A.T.C.C. recently adopted a new and more stringent test for predicting color behavior in three commercial drycleanings.

FOR MORE SATISFIED CUSTOMERS make your selections from the ARIDYE and AQUAPRINT COLORS charted here. *Most of these colors also give you fastness to light and washing that meets virtually any end-use requirement.*

ARIDYE and AQUAPRINT pigment printing colors are equally advantageous for fast-color printing cottons, synthetics and blends for a wide variety of apparel and household uses.

Samples and full information on any or all these colors are yours for the asking. Simply write or phone the Color & Chemicals Division office nearest you.



ARIDYE-AQUAPRINT COLORS

Which provide the highest degree of fastness to drycleaning

TESTED IN ACCORDANCE WITH NEW A.A.T.C.C. TEST No. 85-1960

ARIDYE SERIES (water-in-oil emulsion system)				AQUAPRINT SERIES (oil-in-water emulsion system)			
Colors	Depths of Shade			Colors	Depths of Shade		
	1:2	1:10	1:100		1:2	1:10	1:100
Chartreuse	★	★	★	Chartreuse	★	★	★
Yellow 3G	★	★	★	Yellow 3G	★	★	●●
Yellow R	★	★	★	Supra Yellow R	★	★	★
Yellow 3R	★	★	★	Yellow 3R	★	●	●●
Golden Yellow RF	★	★	★	Golden Yellow RF	★	★	★
Yellow K	★	★	★	Supra Yellow K	★	★	★
Yellow RK	★	★	★	Yellow RK	★	★	★
Orange R	★	●	●	Supra Orange R	★	●	●
Orange 2R	★	★	★	Orange 2R	★	★	★
Scarlet RD	★	★	★	Not available in this series			
Pink Y	★	★	★	Pink Y	★	★	★
Brill. Fast Pink 3B	★	★	★	Brill. Fast Pink 3B	★	★	★
Fluorescent Pink B	★	★	★	Fluorescent Pink B	★	★	★
Red B	★	★	●	Supra Red B	★	★	●
Red 3B	★	★	●	Supra Red 3B	★	★	●
Red RF	★	★	●	Supra Red RF	★	★	●
Brilliant Red	★	★	★	Brilliant Red	★	★	★
Brill. Fast Fuchsia	★	★	★	Brill. Fast Fuchsia	★	★	★
Violet 3RD	★	★	★	Violet 3RD	★	★	★
Violet 4B	★	★	●	Supra Violet 4B	★	★	★
Royal Blue R	★	★	★	Royal Blue R	★	★	★
Blue 3G	★	★	●	Supra Blue 3G	★	★	●
Blue 4G	★	●	●	Not available in this series			
Blue 5G	★	★	●	Not available in this series			
Green B	★	★	★	Supra Green B	★	★	★
Green Y	★	★	★	Supra Green Y	★	★	★
Green 2K	★	★	★	Green 2K	★	★	★
Green 2KB	★	★	★	Green 2KB	★	★	★
Brown Y	★	★	★	Brown Y	★	★	★
Brown R	★	★	★	Supra Brown R	★	★	★
Brown 3K	★	★	★	Brown 3K	★	★	★
Brown 4K	★	★	★	Brown 4K	★	★	★
Gray 2B	★	★	●	Not available in this series			
Not available in this series				Gray 3B	★	★	●
Not available in this series				Gray 4B	★	★	●
Black K	★	★	★	Supra Black K	★	★	★
Black 2K	★	★	★	Not available in this series			

★ Suitable ● Slight color loss ●● Moderate color loss

The fastness ratings given are based on prints for each color in 1:2, 1:10 and 1:100 cuts. Ratings may be different in longer cuts. Prints were made on 80 x 80 cotton and then dried and cured for 3 minutes at 300° F.

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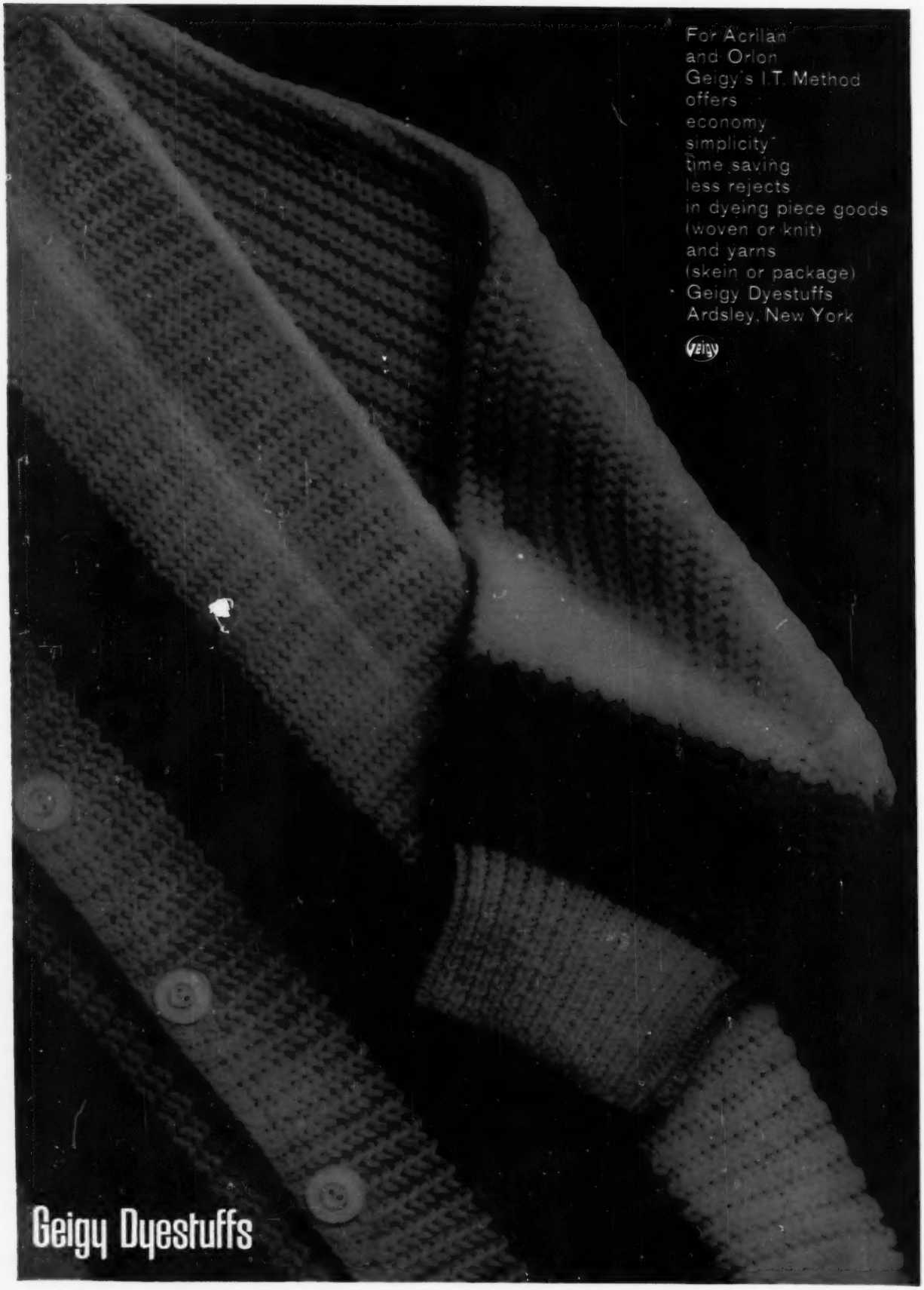
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DYESTUFF REPORTER
DEVOTED TO TEXTILE WET-PROCESSING

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DEVOTED EXCLUSIVELY TO TEXTILE WET PROCESSING

ADR

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POTENTIAL BETA-GAUGE APPLICATIONS IN THE TEXTILE INDUSTRY

OTTO TESZLER, S OGAWA and HENRY A RUTHERFORD

The Textile Research Center, School of Textiles, North Carolina State College, Raleigh, NC

An attempt has been made to show the usefulness of a beta gauge as a means for measuring weight (mass per unit area) nondestructively. Experiments were conducted using the beta gauge for measurements of wet pick-up, extent of drying, fabric uniformity, and fabric abrasion or wear. There are many other operations in the textile industry where the instrument can conceivably be used, but no attempt was made to study the various applications exhaustively. Rather, emphasis was placed on the establishment of principles on the basis of which complete systems capable of measurement and automatic control can be developed.

INTRODUCTION

THE absorption of *beta* radiation in a material is given, with rather good accuracy, by the exponential law

$$I = I_o\, e^{-\mu_m p}$$

where I_o is the intensity of the radiation flux incident on the absorber; I is the intensity of the transmitted radiation flux; μ_m is the mass absorption coefficient; and p is the product of the thickness (cm) and density (g/cm^3) of the material ($p = g/cm^2$). From this expression it follows that it is possible to measure the density-thickness or weight per unit area of a material. The absorption of *beta* radiation is a function primarily of the weight (mass per unit area) and secondarily of the atomic number of the material.

In its simplest form the beta gauge consists of a source of beta radiation, a detector such as an ionization chamber, an amplifier and an indicating meter. In the ionization chamber the incoming radiation is converted into an electric current; the amplifier transforms this small current into an amount sufficient to be measured on the indicating meter. The gauge can continuously measure the weight (mass per unit area) or thickness of a material, either moving or stationary.

There are certain operations in the textile industry in which the determination of weight is important, both in the manufacturing and in wet-processing areas. In the latter, the application of chemicals or finishes to fabrics from solutions, suspensions, and/or emulsions, using a padder, is a good example. The amount of material applied to the cloth during passage through the padder is important and is ordinarily controlled for any given solution by the pressure on the squeeze rolls. The measurement of the so-called "wet pick-up" is done gravimetrically and is therefore destructive and time-consuming. Obviously, the beta gauge would appear to offer advantages for the continuous determination of the weight of the padded material, and thus of the wet pick-up, without delay and with an accuracy much better than that afforded by the usual procedure. This is one example of beta-gauge application that has been studied in the present investigation. Others involved the measurement extent of drying, fabric uniformity, and fabric wear.

DISCUSSION

INSTRUMENTATION, CALIBRATION, AND ORIENTING EXPERIMENTS———For the investigation of the applicability of the instrument to textile problems, a Tracerlab Model BG-7 Beta-Gauge* was obtained. The beam of beta radiation in this instrument is furnished by approximately 400 millicuries of Krypton -85. A Minneapolis-Honeywell Brown Instrument "Electronik" strip chart recorder (Type 135 × 12) is connected to the console for recording continuous measurements.

In the beginning, the gauge was mounted on the rear framework of a Morrison 60-inch two-roll padder as shown in Figure 1. The instrument was then calibrated, using pieces of cloth of known weight, both in terms of milligrams per square centimeter and ounces per square yard (Figure 2). In the initial experiments it was found that the cloth construction, the fiber content of the cloth, and deformation of material caused by changing the pressure on the pad rolls had a negligible influence on the beta-gauge measurements. The rate of travel of the material was found to be a primary factor influencing the response of the instrument. The response was measured in experiments in which pieces of cheese cloth (representing 16% increase in the mass per unit area of the base material) of varying lengths were attached to the 80 × 80 print cloth. Since all other variables were maintained constant, the change in the height and width of the peaks on the recorded graphs produced by the "error" was interpreted in terms of instrument response. Figures 3 and 4 show, respectively, the percent response as a function of the length of error" and the time an "error" was observed by the beta gauge. (In these figures the continuous curves

*The instrument for this work was furnished by Tracerlab, Inc, Waltham, Mass.

Figure 1
Experimental apparatus for the measurement of wet pick-up.

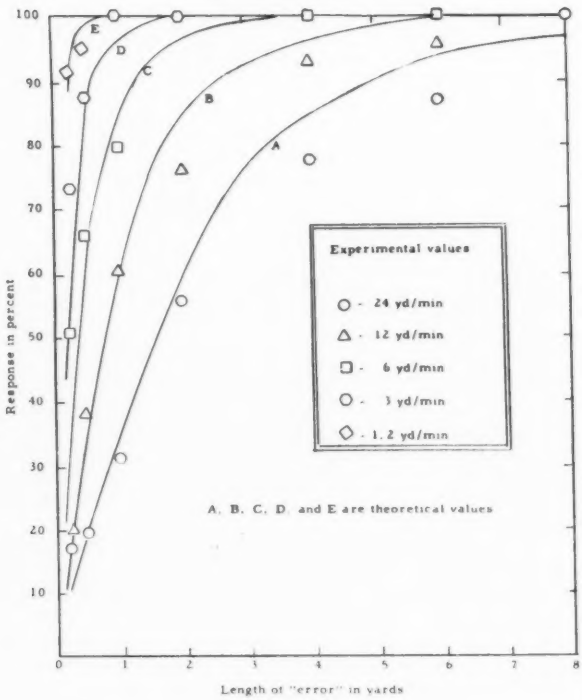

Figure 3
Response curves as a function of the length of "error".

represent the theoretical response while the points show the experimental values). These results indicate that at the maximum rate of travel obtainable under these laboratory conditions, namely, 24 yards per minute, and with this particular model beta gauge, the "error" had to be at least eight yards long (or observed for more than 20 seconds) for a 100% response.

MEASUREMENT OF WET PICK-UP——The work proceeded to a series of padding operations in which the beta-gauge was used to measure continuously the wet pick-up of the material as a function of the pressure applied on the pad rolls. A strip-chart recording of the wet pick-up, using water alone, obtained with two, 10,

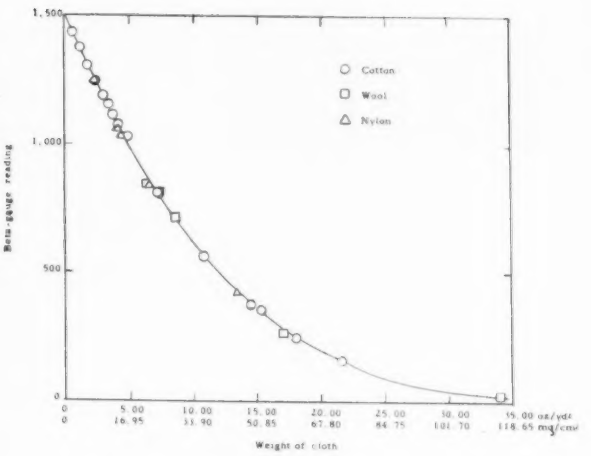

Figure 2
Calibration curve relating beta-gauge readings to weight of cloth in oz/yd² or mg/cm².

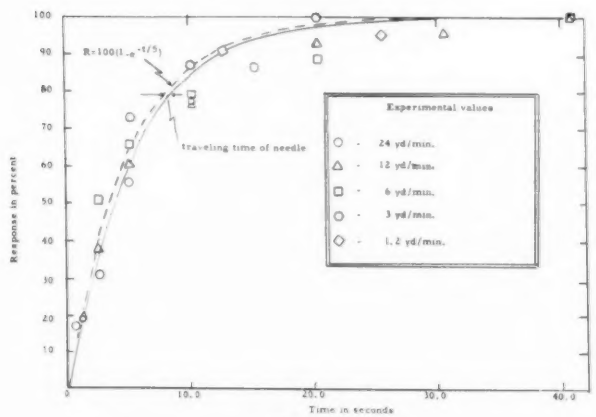

Figure 4
Response as a function of the time an "error" is observed.

and 18 tons of pressure on the rolls is reproduced in Figure 5. Due to the unevenness of the material, indications of the uniformity of padding could not be obtained. However, the graphs showed that the beta gauge readily measured the changes in the mass per unit area (in terms of percent wet pick-up) of the material as the pressure on the pad rolls was varied.

The last experiments involved the padding of 200 yards of print cloth with a solution that contained 0.5% carboxymethyl cellulose and 15.0% sodium sulfate. Initially the pressure on the pad rolls was 18 tons; this pressure was purposely changed to 10, six, two, 10, and eight tons at 33-yard intervals while the cloth was padded. The strip-chart obtained of this continuous measurement is shown in Figure 6. The difference caused by a change of two tons in the pressure is shown at the top of Figure 6; at eight tons, the pick-up averaged 99.5%, while at 10 tons, it averaged 94.0%. In most padding operations, it is desired to maintain the wet pick-up variation below 5%, ie, in the range of ± 2.5%. It appears from Figure 6 that with a two-gauge system with a subtractive mechanism to eliminate the effect of weight variations in the cloth, this range of control could be achieved by the automatic adjustment of pressure on the pad rolls, activated by a beta-gauge.

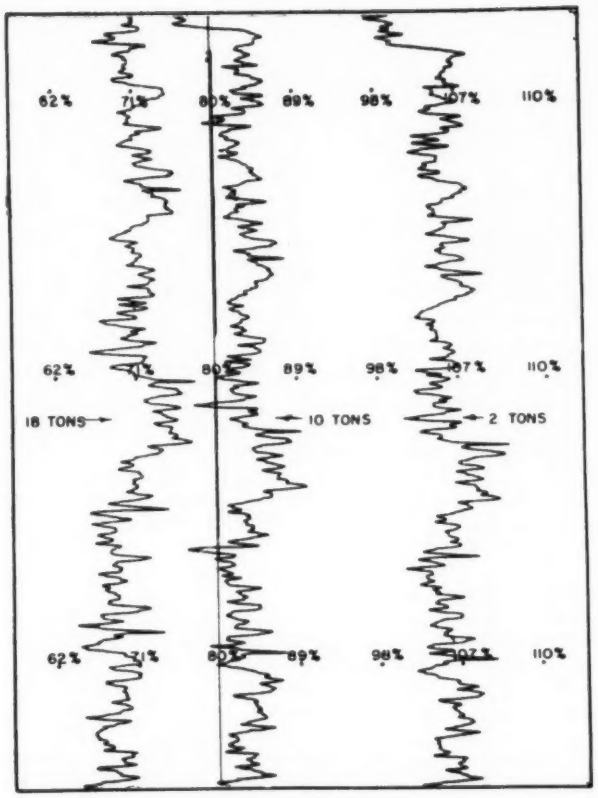

Figure 5
Continuous measurement of percent wet pick-up with the beta-gauge. Superimposed scale represents percent pick-up.

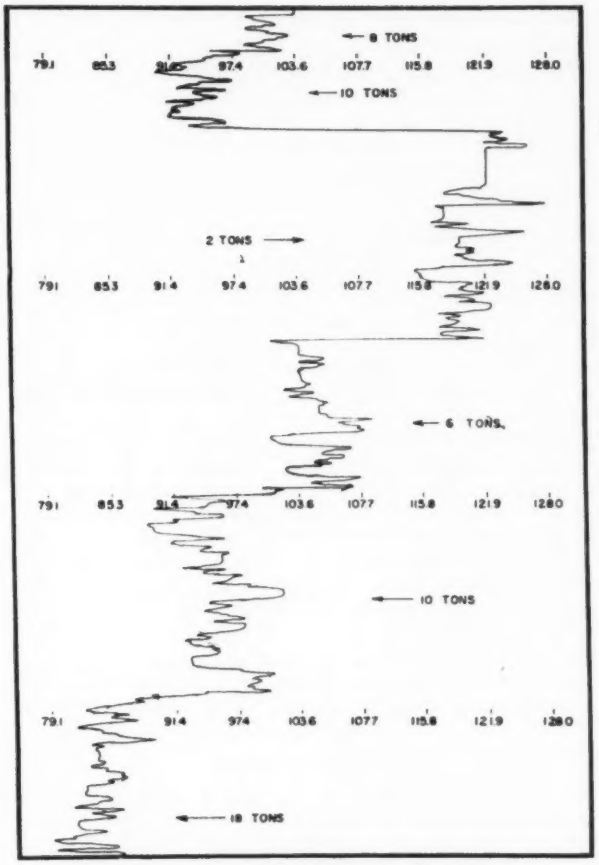

Figure 6
A recording of the continuous measurement of wet pick-up at different pressures on the pad roll.

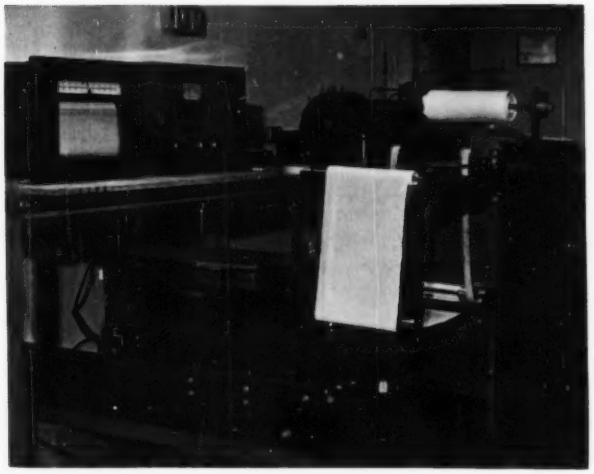

Figure 7
Experimental apparatus for the measurement of controlled drying.

CONTROLLED DRYING——Open-width, continuous drying of materials is another important phase of wet-processing. Materials being processed often must be dried to a predetermined constant moisture content. Experiments were carried out to determine whether moisture content of cloth in the range of 0 to 30% could be measured continuously with the beta-gauge. The experimental apparatus is shown in Figure 7. The wet material (padded to 70% pick-up) was passed through an oven and its weight measured at the point of exit.

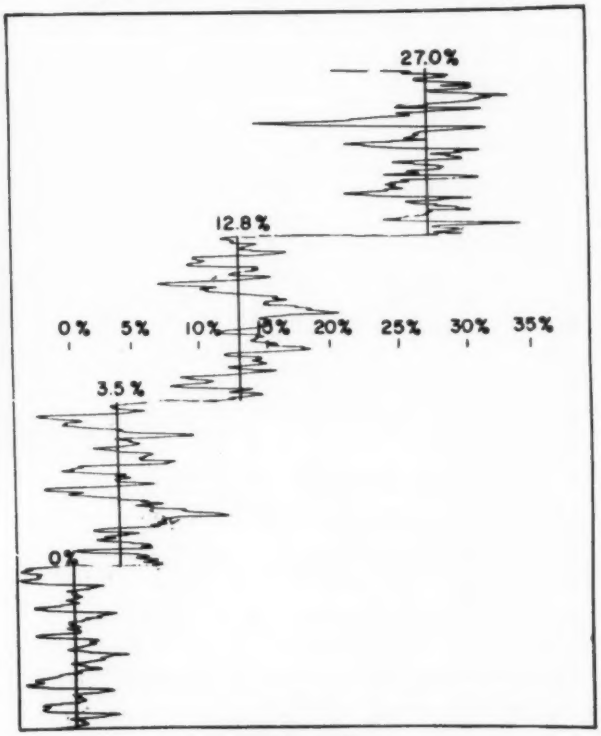

Figure 8
Moisture content of cotton fabric as a function of drying time.

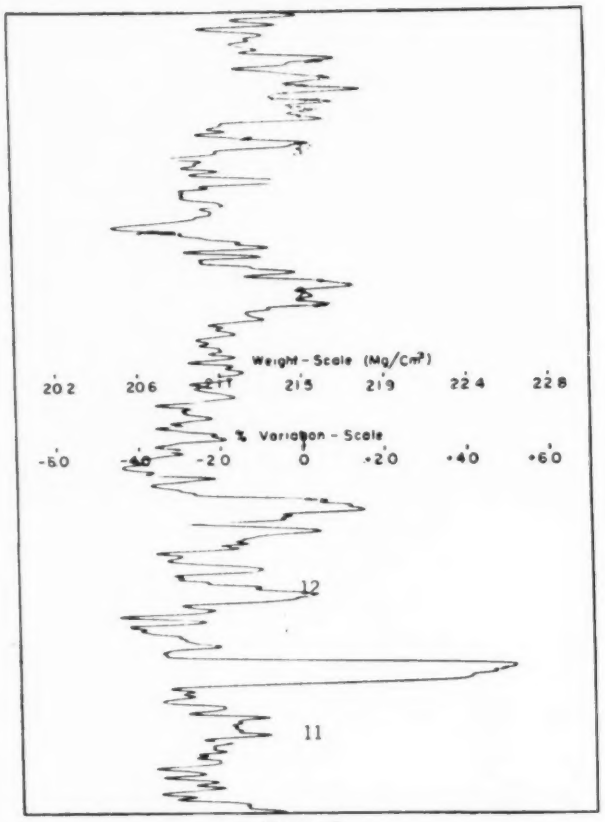

Figure 9
A recording of the continuous measurement of fabric uniformity.

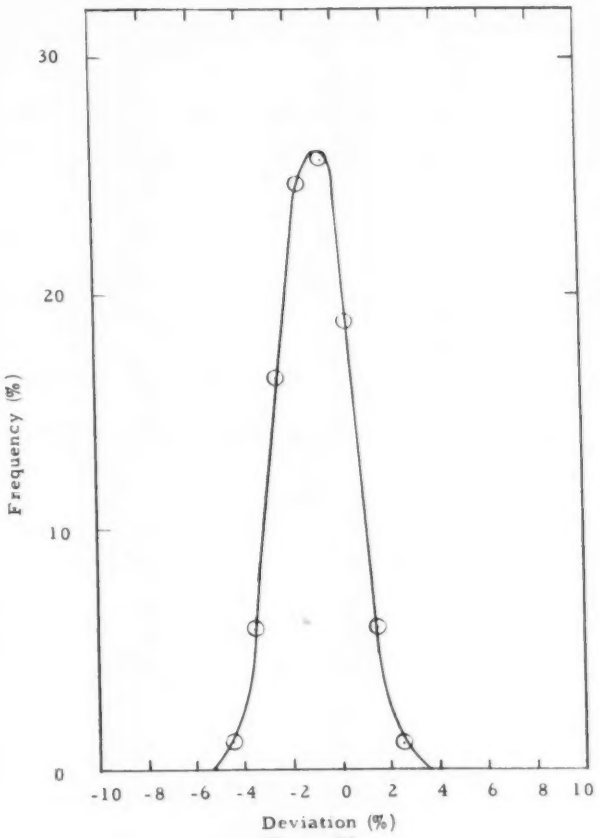

Figure 10
Frequency distribution curve for twill weave cotton material produced on loom B.

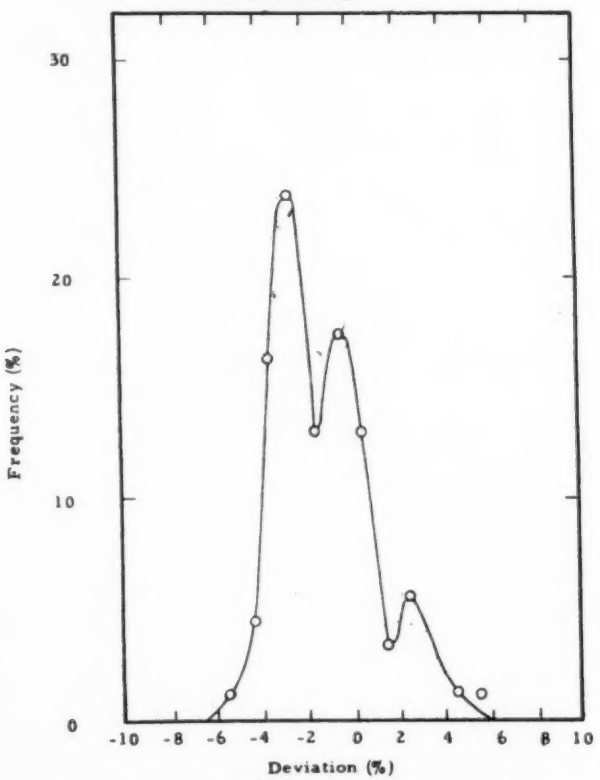

Figure 11
Frequency distribution curve for twill weave cotton material produced on loom C.

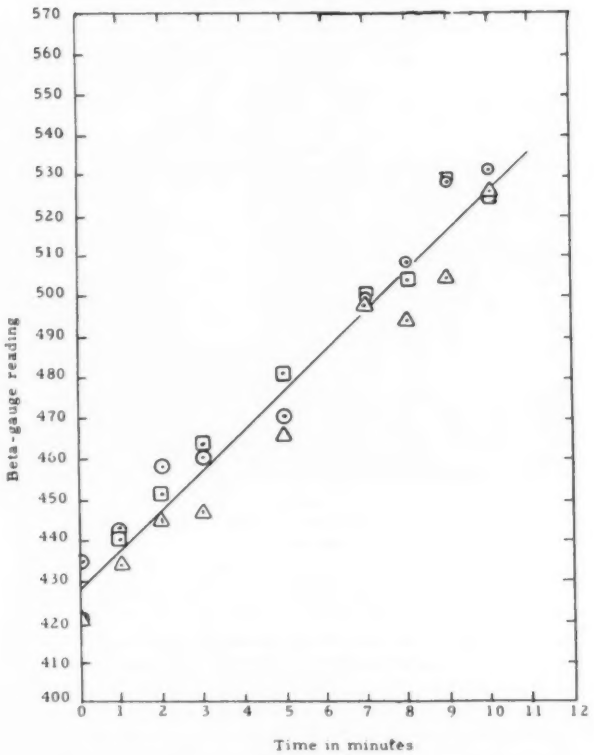

Figure 12
Beta transmission curve for wool serge (mayo weave) samples tested in the Accelerotor.

This was repeated several times at different speeds. As a result, the material contained less and less water as the rate of travel was decreased. Measurements on materials conditioned at 70°F and 65 RH for 24 hours were also made. The average weight of the cloth under these conditions was used as the reference point and was arbitrarily charted as zero percent moisture content. The results, combined into one graph, are shown in Figure 8. Moisture content of the order of 3.5% was readily measured. Again, because of the unevenness of the material, indications of the uniformity of drying could not be obtained. The results do, however, give some idea of the sensitivity of the beta-gauge toward small differences in the moisture content of the cloth.

FABRIC UNIFORMITY———In the preceding discussion it was pointed out that the beta-gauge measured and recorded continuously the inherent unevenness of the fabrics used. Thus, it was suggested that the gauge might be employed to measure just such properties for quality-control purposes. Accordingly, fabric uniformity has been studied, on a somewhat limited scale, to determine the usefulness of the beta-gauge in this application.

The experiments were conducted on various cotton fabrics. In each case, 125 yards, composed of five A portion of a recording of the measurement of fabric 25-yard lengths from five different looms, were used. weight is reproduced in Figure 9. The chart is calibrated both in terms of weight (mg/cm^2) and percent variation. The zero point on the latter scale at the mid-position on the chart corresponds to the target or the manufacturer's designated weight (21.53 mg/cm^2) of the material. With the exception of the strong peak resulting from a weaving error indicated at the bottom of the chart, the graph represents the normal unevenness associated with the material.

An analysis of these charts using the method employed to evaluate Uster evenness charts showed that the loom-to-loom non-uniformity was in most cases negligible, that the average unevenness within the materials in all cases was less than 2% and, finally, that the maximum percent variation was of the order of $\pm$ 5%. The Uster method, although a rapid means of evaluating beta-gauge charts, characterizes evenness of a fabric only in general, average terms. The frequency distribution method, on the other hand, presents a more realistic analysis of evenness within, as well as between, materials. Typical distribution curves obtained using this method are shown in Figures 10 and 11.

FABRIC ABRASION———Because abrasion results in a decrease in weight, the use of beta-gauge for detecting weight losses in the several types of abrasion instruments is suggested. Experiments were carried out in which samples of selected materials were subjected to "wear" in the Accelerotor for varying periods of time. After each treatment, the accrued "wear", in terms of the change in the mass per unit area, was evaluated using the beta-gauge. A representative transmission plot as a function of the time of treatment is illustrated in Figure 12, and shows that the loss in weight is directly proportional to length of time of abrasion. The various points indicate the results obtained in three separate experiments on the same fabric.

SUMMARY

In the various experiments discussed above, an attempt has been made to show the usefulness of a beta-gauge as a means for measuring weight non-destrictively. There are many other operations in the textile industry where the instrument could conceivably be used, but no attempt has been made to study the various applications exhaustively. However, plans for forthcoming work do call for a complete and thorough study of the sizing process, which incorporates padding and drying operations, with emphasis on establishment of principles on the basis of which a complete system capable of automatic control can be developed.

A brief list of selected general references on the principles of beta-gauge operation, its uses in various industries, and possible uses in the textile industry are given in the attached bibliography.

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FUTURE PAPERS

The following specially contributed articles have been accepted for publication in American Dyestuff Reporter during 1961:

"The Effect of Laundering Methods on the Wrinkling of 'Wash-and-Wear' Cotton Shirts"———Melba B Shilling and Rose W Padgett, Purdue Univ

"Changes in the Properties of Partially Phosphonomethylated Cotton Caused by Crosslinking Prior to Phosphonomethylation" ———Stanley R Hobart, George L Drake Jr and John D Guthrie, Southern Regional Research Laboratory

"Politics, Phoenix and Paterson———Textile Processing in New Jersey"———Sidney M Edelstein, Dexter Chemical Corp

"Application of the APO-THPC Flame Retardant to Cotton Fabric" ———George L Drake Jr, John V Beninate and John D Guthrie, Southern Regional Research Laboratory

"Consumer Complaints: A Source of Information for Producers" ———Samuel L Myers, Morgan State College

"Studies of Wrinkle Resistance Finishes for Cotton Textiles: III. An Accelerated Storage Test for 'Wash-and-Wear' Cotton Fabrics"———Richard L Arceneaux, Gloria A Gautreaux, Robert M Reinhardt, and J David Reid, Southern Regional Research Laboratory

"Energetic Interactions between Textile Fibers and Solid Soil in the Washing Process"———H Lange, Henkel & Cie, GMBH

"A Study of Hypochlorite-resistant Melamine-type Finishes"——— Sidney L Vail, J G Frick Jr and J David Reid, Southern Regional Research Laboratory

"Formamide-Formaldehyde Products as Wrinkle-Resistance Finishing Agents for Cotton Fabrics"———Sidney L Vail, J G Frick Jr, Paul L Murphy Jr and J David Reid, Southern Regional Research Laboratory

"Dimethyloltriazone Finishing Agents with Long-chain Alkyl Substituents for Cotton Textiles"———Sidney L Vail, J G Frick Jr, Paul J Murphy Jr and J David Reid, Southern Regional Research Laboratory

"Dyeing Unscoured Wool"———Louis I Fidell, American Cyanamid Co

"Dihydroxyethyleneureas as Wrinkle-resistance Finishing Agents for Cotton"———Sidney L Vail, Paul J Murphy Jr, J G Frick Jr and J David Reid, Southern Regional Research Laboratory

"Formic Acid Colloid of Methylolmelamine Resin Finish of Cotton for Wrinkle- and Muss-Resistance: Preliminary Cost Study"——— K M Decossas, O J McMillan Jr, W N Berard, W A Reeves, E F Pollard and E L Patton———Southern Regional Research Laboratory

COLOR EFFECTS PRODUCED IN NEARLY WHITE FABRICS BY HOUSEHOLD DETERGENTS

M S FURRY, P L BENSING and M L JOHNSON

Clothing and Housing Research Division

Agricultural Research Service

U S Department of Agriculture

INTRODUCTION

TO obtain information helpful in home laundering, the Textiles and Clothing Laboratory is studying the effectiveness of selected detergents, fluorescent whiteners, and oxidizing bleaches for whitening fabrics by reducing grayness and yellowness in them. Findings have been reported (*1, 2*) indicating the improvement that such agents produced in both unsoiled and soiled cotton sheeting laundered repeatedly.

Most household detergents for laundering now contain fluorescent whiteners, some contain bluing or other colored pigments. Because these products differ in their effectiveness and may produce marked color changes in fabrics, the suitability of five representative household detergents for fabrics of different fiber types and finishes was investigated. Reported here are the fluorescent and nonfluorescent color effects produced by these detergents in twelve nearly white unsoiled fabrics, currently used for blouses, dresses, slips, and other lingerie. Studies of naturally soiled fabrics will be reported subsequently.

EXPERIMENTAL PROCEDURE

DETERGENTS AND TEST FABRICS———The composition analyses for the household detergents selected for the study are given in Table I. The four synthetic detergents (syndets) included one medium built and three more heavily built products. Each contained a fluorescent whitener, the type and amount of which were not determined; three contained colored pigments, identified only by the color. Also included was an unbuilt soap, without whitener or pigment.

The twelve nearly white test fabrics included 4 cottons, 3 Dacrons, 3 nylons, one Dacron-cotton blend, and one nylon-Dacron-cotton blend. The type of construction for each fabric, the weight per square yard, any special finish that was applied, and the color measurements before laundering are given in Table II. The fabrics were obtained from textile mills, finishing plants, and lingerie manufacturers.

WASHING METHOD———Samples of the fabrics, approximately square and weighing 5 ± 0.2 grams each, were cut from the materials. Before laundering, the samples were pretreated with carbon tetrachloride for 10 minutes, dried, then soaked in a solution containing 0.025 percent concentration of soap and 0.5 percent sodium hexametaphosphate in distilled water at 50°C, rinsed thoroughly in hexametaphosphate solution, finally rinsed in clear water, and dried on plate glass.

For the laundering, two samples of each fabric were washed in 150 ml of the test solution (0.10 percent concentration of detergent in distilled water) at 60°C in a pint jar in a Launder-Ometer operated at 42 rpm for 15 minutes, rinsed three times in beakers in 300 ml of distilled water at 60° C for one minute each, then spread flat on plate glass to dry. Samples were washed and dried 30 times. Similar washings were made at 40°C. These washing temperatures, 60°C and 40°C (140°F and 104°F), are within the range ordinarily used in home laundering.

COLOR MEASUREMENT———The automatic (barier-layer) color and color difference meter, described by Hunter (*3*), was used to obtain the fluorescent and nonfluorescent whitening and color effects in the fabrics. Filters were used to exclude ultraviolet from the light source. This instrument gives three values for each color measured: "Rd," which measures percentage of diffuse reflectance from zero to 100; "a", which measures redness when plus, gray at zero, greenness when minus; and "b," which measures yellowness when plus, gray at zero, blueness when minus. Each sample was read on the three scales in the same two places, with and without the ultraviolet-absorbing filters, before laundering and after one, 10, 20, and 30 washes.

VISUAL EXAMINATION———In order to relate the quantitative measures for evaluating color effects and subjective judgments of whiteness and brightness, visual rankings were made of four of the laundered fabrics in which color effects seemed most noticeable. Three workers, not especially trained in color observations, individually viewed the samples on a clear day in north daylight and under a daylight lamp with added ultraviolet (Macbeth Examolite Type C-4D-UV). In each case, the observer placed the samples, double thickness of fabrics with approximately two-inch square surface in view, on a light gray background and arranged them in order of their whiteness (from bluish white to creamy white) according to her best

TABLE I

Composition of household detergents

Household Detergent	*Active ingredient (Anhydrous synthetic detergent or soap) (Percent)*	*Matter volatile at 105°C (Percent)*	*Matter insoluble in water (Percent)*	*Alkaline salts (as Na_2CO_3) (Percent)*	*Neutral Salts (Percent)*	*Phosphate (as P_2O_5) (Percent)*	*Pigment*[1]	*Fluorescent whitener*[1]
Syndet A	24.2	4.4	0.3	10.9	59.1	16.7	Pink	+
Syndet B	21.2	9.3	0.2	15.5	52.4	24.6	Blue	+
Syndet C	21.7	6.2	0.3	17.5	51.6	21.5	Blue	+
Syndet D	19.1	7.2	0.1	15.1	57.2	29.6	——	+
Soap	92.5	2.3	2.0	2.7	0.4	0	——	−

[1]Color and plus sign indicate ingredient is present; minus sign indicates ingredient is absent.

TABLE II

Color measurements of unlaundered fabrics and fabrics laundered with five household detergents at 60° and 40° C

Fabric, finish, and weight per square yard	Times Laundered	Detergent	Color measurements, unlaundered and laundered at 60° C: UV included "Rd" (Percent)	"a"	"b"	UV excluded "Rd" (Percent)	"a"	"b"	Color measurements, unlaundered and laundered at 40° C: UV included "Rd" (Percent)	"a"	"b"	UV excluded "Rd" (Percent)	"a"	"b"
1) Cotton sheeting; 4.2-oz	0	——	89.8	+0.5	+3.3	89.8	+0.6	+3.6	89.8	+0.5	+3.3	89.8	+0.6	+3.6
	30	Syndet A	90.6	+2.2	−1.4	90.2	+0.8	+2.2	90.7	+1.9	−0.3	90.4	+1.0	+2.9
	30	Syndet B	90.7	+2.9	−4.4	90.5	+0.4	+2.2	91.4	+2.0	−2.4	90.7	+0.5	+2.8
	30	Syndet C	90.6	+2.4	−2.8	90.5	+0.3	+2.3	91.4	+2.4	−3.3	91.0	+0.7	+2.7
	30	Syndet D	91.2	+2.0	−1.6	91.5	+0.5	+2.2	91.4	+1.8	−1.1	91.1	+0.8	+2.8
	30	Soap	91.1	+0.9	+1.6	91.0	+0.6	+2.4	91.2	+0.8	+2.4	91.4	+0.8	+2.8
2) Cotton batiste; epoxy resin with additives; 3.6-oz	0	——	89.5	+0.5	+2.4	89.4	+0.4	+2.9	89.5	+0.5	+2.4	89.4	+0.4	+2.9
	30	Syndet A	86.1	+1.7	+1.2	85.8	+1.0	+3.2	88.2	0	+0.5	88.2	+0.4	+3.0
	30	Syndet B	84.4	−0.4	−2.2	84.1	−1.7	+1.5	85.8	−0.6	−2.4	85.7	−1.7	+1.3
	30	Syndet C	80.9	−4.9	−3.1	80.5	−6.2	−0.2	84.2	−3.5	−2.5	84.1	−4.7	+1.0
	30	Syndet D	88.9	+1.1	+0.6	88.4	0	+3.2	90.0	+0.5	−0.2	90.0	−0.2	+3.1
	30	Soap	89.5	+0.3	+3.0	89.3	+0.1	+3.5	90.3	−0.1	+2.7	90.3	−0.2	+3.8
3) Cotton batiste; melamine-ethylene urea resin combination, acrylic latex, silicone softener and fluorescent whitener; 3.4-oz	0	——	91.5	+2.5	−1.9	91.2	+0.6	+3.4	91.5	+2.5	−1.9	91.2	+0.6	+3.4
	30	Syndet A	88.9	+2.4	−1.5	88.3	+0.7	+3.1	89.9	+2.4	−1.6	89.5	+1.0	+3.6
	30	Syndet B	89.0	+2.7	−4.2	88.7	+0.1	+2.8	89.9	+2.2	−3.6	89.5	−0.2	+2.9
	30	Syndet C	88.1	+1.5	−3.2	87.9	−0.9	+2.7	89.3	+1.2	−3.4	88.8	−1.3	+2.9
	30	Syndet D	90.5	+2.4	−1.9	90.4	+0.5	+3.1	91.4	+2.4	−2.5	91.2	+0.7	+3.3
	30	Soap	90.9	+2.0	−0.9	90.5	+0.5	+3.3	91.4	+2.3	−1.1	91.0	+0.9	+3.4
4) Cotton sateen; dimethylol ethylene urea resin with additives and fluorescent whitener; 4.0-oz	0	——	83.8	+2.0	−2.3	83.4	+0.1	+2.6	83.8	+2.0	−2.3	83.4	+0.1	+2.6
	30	Syndet A	85.6	+2.0	−1.4	85.5	+0.6	+2.5	86.5	0	−1.5	86.4	+0.6	+2.5
	30	Syndet B	85.9	+2.2	−3.0	85.6	+0.1	+2.3	86.7	+2.0	−3.7	86.3	−0.4	+2.3
	30	Syndet C	85.1	+1.5	−3.2	84.9	−0.6	+2.0	86.6	+1.0	−4.4	85.8	−1.2	+1.5
	30	Syndet D	86.4	+2.0	−2.0	85.7	+0.4	+2.6	87.3	+1.8	−2.6	87.4	+0.2	+2.4
	30	Soap	86.6	+1.4	−0.9	85.9	+0.2	+2.6	86.9	+1.4	−1.2	86.8	+0.1	+2.5
5) Dacron batiste; 2.1-oz	0	——	86.9	+0.2	+3.6	87.0	0	+4.0	86.9	+0.2	+3.6	87.0	0	+4.0
	30	Syndet A	86.5	+0.3	+3.2	85.8	0	+3.5	86.0	−0.1	+3.3	86.1	−0.2	+3.8
	30	Syndet B	86.1	0	+3.4	86.0	−0.1	+3.7	86.4	−0.2	+3.3	86.6	−0.4	+3.8
	30	Syndet C	86.4	0	+3.3	86.4	−0.1	+3.5	86.2	−0.2	+3.4	86.6	−0.3	+3.7
	30	Syndet D	86.7	+0.2	+3.1	86.8	+0.2	+3.5	86.6	−0.3	+3.2	87.0	−0.3	+3.7
	30	Soap	86.7	0	+3.2	86.4	−0.2	+3.4	86.7	−0.2	+2.7	87.2	−0.4	+3.5
6) Dacron crepe; 2.3-oz	0	——	88.5	−0.4	+3.5	88.4	−0.5	+3.7	88.5	−0.4	+3.5	88.4	−0.5	+3.7
	30	Syndet A	89.7	0	+2.9	89.5	+0.1	+3.1	89.3	−0.4	+3.1	89.7	−0.4	+3.1
	30	Syndet B	89.8	−0.2	+2.7	89.6	−0.3	+3.3	90.0	−0.5	+2.8	89.5	−0.5	+3.3
	30	Syndet C	89.6	−0.6	+2.4	89.5	−0.7	+2.8	89.8	−0.6	+2.8	89.8	−0.6	+3.0
	30	Syndet D	90.0	−0.2	+2.9	90.0	−0.1	+3.0	89.9	−0.5	+2.6	90.2	−0.5	+3.0
	30	Soap	90.3	−0.2	+3.0	90.5	−0.4	+3.2	89.9	−0.5	+3.0	90.8	−0.5	+3.0
7) Dacron tricot; 2.8-oz	0	——	87.0	+0.6	+1.9	87.2	+0.4	+2.0	87.0	+0.6	+1.9	87.2	+0.4	+2.0
	30	Syndet A	88.5	+0.6	+1.6	87.0	+0.4	+2.5	86.3	+0.8	+1.6	86.3	+0.8	+2.0
	30	Syndet B	88.4	+0.5	+1.5	87.0	+0.3	+2.3	86.8	+0.6	+1.7	87.0	+0.7	+2.1
	30	Syndet C	88.1	+0.4	+1.2	86.7	+0.2	+2.1	86.8	+0.6	+1.7	87.3	+0.6	+1.9
	30	Syndet D	88.5	+0.7	+1.3	86.8	+0.5	+2.2	86.3	+0.6	+1.8	86.5	+0.6	+2.1
	30	Soap	87.8	+0.7	+1.3	86.8	+0.5	+1.9	86.3	+0.6	+1.9	86.8	+0.9	+2.1
8) Dacron-cotton batiste (65% Dacron, 35% cotton); 2.8-oz	0	——	83.2	+0.6	+1.1	83.1	+0.5	+1.4	83.2	+0.6	+1.1	83.1	+0.5	+1.4
	30	Syndet A	83.7	+1.4	−1.5	83.8	+0.5	+0.4	83.4	+1.1	−0.8	83.6	+0.9	+0.5
	30	Syndet B	83.9	+1.9	−3.1	83.9	+0.4	+0.5	83.5	+1.6	−2.3	83.4	+0.8	+0.5
	30	Syndet C	84.0	+1.5	−2.3	84.0	+0.4	+0.4	83.5	+1.4	−2.3	83.4	+0.6	+0.9
	30	Syndet D	84.4	+1.2	−1.2	83.9	+0.4	+0.4	83.6	+1.3	−1.0	83.7	+0.8	+0.5
	30	Soap	84.4	+0.8	−0.6	84.2	+0.8	0	83.9	+0.7	+0.2	83.8	+0.8	+0.4
9) Nylon crepe; 1.8-oz	0	——	87.1	+0.1	+4.6	87.0	+0.1	+5.0	87.1	+0.1	+4.6	87.0	+0.1	+5.0
	30	Syndet A	87.8	+0.6	+3.3	87.8	+0.2	+4.4	87.8	0	+4.2	88.5	0	+4.8
	30	Syndet B	87.6	+1.0	+2.3	87.0	+0.3	+4.6	88.2	+0.2	+3.3	89.0	0	+4.7
	30	Syndet C	87.7	+0.7	+2.9	87.6	+0.1	+4.4	88.6	+0.2	+3.5	89.1	−0.1	+4.7
	30	Syndet D	88.1	+1.3	+2.3	88.0	+0.6	+4.5	88.9	+0.2	+3.3	88.8	−0.2	+4.7
	30	Soap	88.2	+0.4	+4.3	88.3	+0.5	+4.5	88.8	0	+4.6	89.2	−0.2	+4.7
10) Nylon satin; 2.4-oz	0	——	90.2	+0.7	+3.0	90.2	+0.6	+3.2	90.2	+0.7	+3.0	90.2	+0.6	+3.2
	30	Syndet A	91.8	+1.6	+3.0	92.0	+1.1	+4.7	91.4	+1.0	+2.7	91.8	+0.9	+3.7
	30	Syndet B	92.0	+2.0	+1.7	91.7	+1.0	+4.3	91.3	+1.4	+2.5	91.7	+0.8	+4.0
	30	Syndet C	92.3	+1.8	+2.0	92.3	+1.0	+4.4	91.8	+1.3	+2.6	92.0	+0.9	+4.2
	30	Syndet D	92.2	+2.2	+1.8	92.0	+1.2	+4.2	91.6	+1.4	+2.6	92.6	+0.8	+3.8
	30	Soap	92.5	+1.2	+3.6	93.0	+1.0	+4.3	91.4	+0.8	+4.4	92.4	+0.8	+4.2
11) Nylon tricot; 2.9-oz	0	——	88.5	−0.2	+5.3	88.6	−0.1	+5.6	88.5	−0.2	+5.3	88.6	−0.1	+5.6
	30	Syndet A	88.6	+0.4	+4.4	88.0	−0.1	+6.1	88.5	+0.6	+3.9	88.4	+0.3	+5.1
	30	Syndet B	88.7	+1.1	+2.8	88.0	−0.2	+6.0	88.4	+0.8	+3.0	88.4	+0.2	+5.4
	30	Syndet C	88.4	+0.7	+3.1	88.0	−0.3	+5.6	88.5	+0.8	+3.1	88.4	+0.1	+5.3
	30	Syndet D	88.2	+1.0	+3.1	88.4	0	+5.7	88.9	+0.8	+3.2	88.8	+0.2	+5.3
	30	Soap	88.8	−0.1	+5.6	88.2	−0.2	+6.2	88.4	0	+5.2	88.4	+0.2	+5.5
12) Nylon-Dacron-cotton batiste (32% nylon, 44% Dacron, 24% cotton); urea-formaldehyde resin with additives and fluorescent whitener; 1.7-oz	0	——	82.1	+1.3	+0.9	81.7	−0.4	+4.8	82.1	+1.3	+1.9	81.7	−0.4	+4.8
	30	Syndet A	83.9	+1.2	+2.9	83.7	0	+6.0	82.4	+1.3	+1.6	82.6	−0.3	+5.0
	30	Syndet B	84.1	+1.3	+2.0	83.8	−0.3	+6.3	82.2	+1.5	+1.4	82.2	−0.2	+5.4
	30	Syndet C	83.7	+0.3	+2.2	83.6	−1.0	+5.6	82.1	+1.1	+1.1	82.1	−0.6	+5.1
	30	Syndet D	85.1	+1.2	+3.0	85.0	−0.1	+6.1	82.7	+1.4	+1.7	82.7	+0.2	+5.3
	30	Soap	83.7	+0.8	+4.0	84.2	−0.1	+6.4	82.4	+1.3	+2.0	82.6	+0.3	+5.2

judgment. Also, the workers viewed the samples under the ultraviolet "black light" of the lamp and arranged them in decreasing order of the brightness of the fluorescence. The results of these visual rankings were compared with the quantitative data for yellow-blue ("b") values for the same samples.

By other visual examinations, the laundered fabrics were viewed in north daylight and rated for acceptability with respect to whiteness. Since the three workers preferred a bluish-white, a porcelain enamel placque with color measurement "Rd," "a," and "b" of 80.1 percent, −1.2, and −0.2, was used as a referent.

COLOR EFFECTS PRODUCED

The detergents produced widely different effects on the fabrics, ranging from considerable improvement in whiteness in some instances to development of grayed blue-green colors in others. Some fabrics showed almost no change in color after the 30 launderings.

In Table II are given color measurements for the twelve test fabrics washed 30 times with the various detergents at 60°C; also, color measurements for similar washings at 40°C. Each value is the average of two measurements from each of two replicate samples. For each washing condition, that part of the color effect due to fluorescence is the difference between the reported "UV included" value and the corresponding "UV excluded" value.

EFFECT BY FABRICS——In fabric 1, bleached cotton sheeting without finish, the changes on repeated laundering with the various detergents were toward lighter, redder and bluer colors; changes were generally slightly greater at 60°C than at 40°C. As might be expected, reflectance measurements were mostly

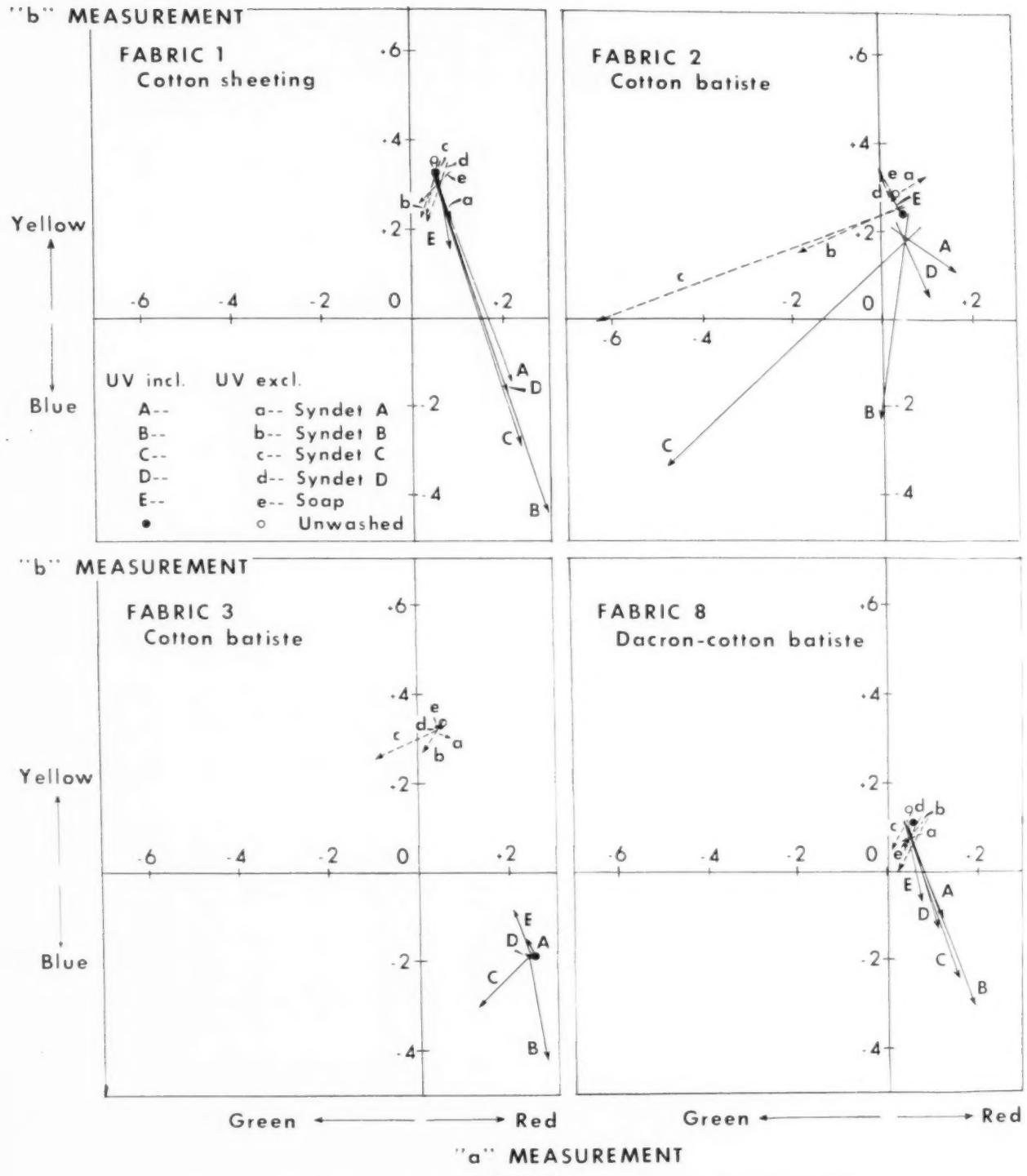

Figure 1
Relationship between yellow-blue ("b") and red-green ("a") measurements for cotton fabrics 1, 2 and 3 and Dacron-cotton fabric 8, washed 30 times with detergents at 60°C

higher for samples washed with syndet D and soap (without pigment) than for those washed with syndets A, B, and C (with pigment).

Figure 1, fabric 1, gives the color changes produced in cotton sheeting, and shows the fluorescent and non-fluorescent relationships between yellow-blue ("b") and red-green ("a") measurements produced by 30 launderings with the different solutions at 60°C. Each line is calculated according to the method of least squares. For comparison in this figure and in others that follow, each line is terminated at positions perpendicularly distant from the experimental points for

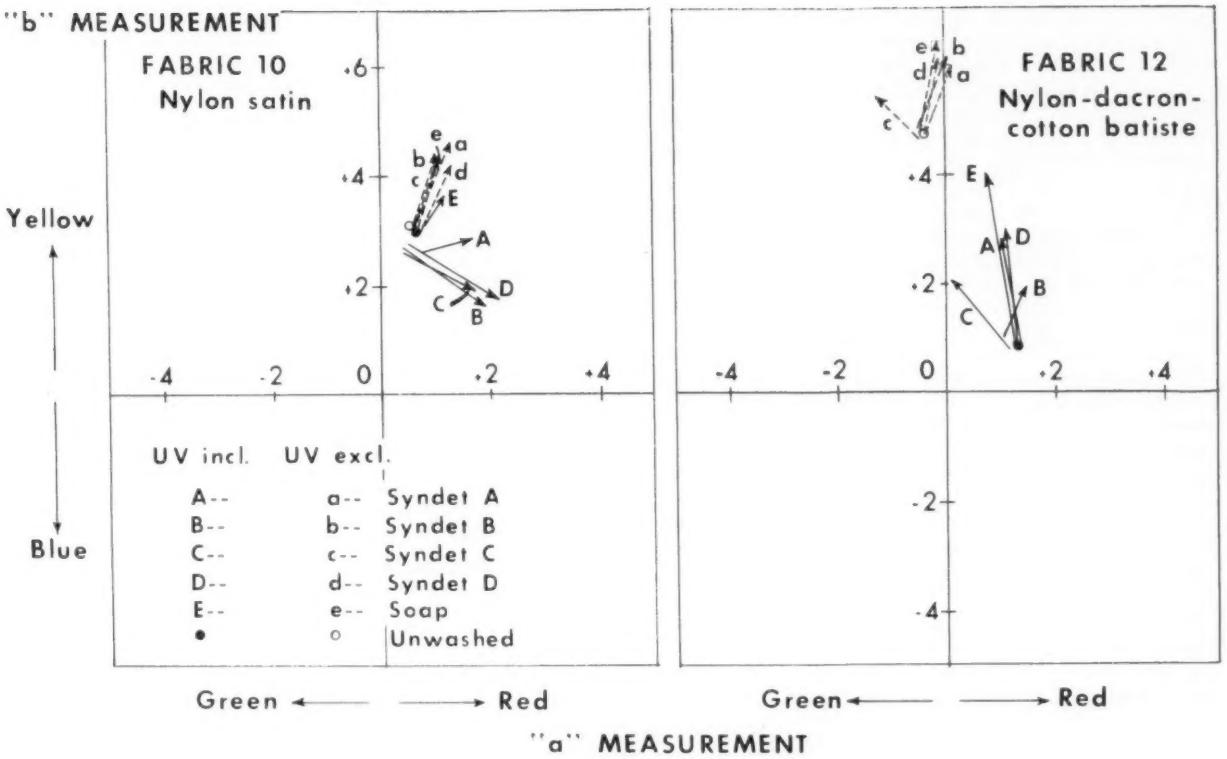

Figure 2
Relationship between yellow-blue ("b") and red-green ("a") measurements for nylon fabric 10 and nylon-Dacron-cotton fabric 12, washed 30 times with detergents at 60°C

the unwashed fabric and the fabric washed 30 times.

The whitening effects due to fluorescence whiteners effectively masked the yellowness; the pigments did not color the fabric.

In visual ratings for acceptable whiteness of fabric 1, samples washed with detergents containing whiteness were considered satisfactory by the observers. Samples washed with syndet B were preferred over those washed with syndet C; both sets of samples appeared whiter than the referent. Next in order and having about the same whiteness were samples washed with syndets D and A. Samples washed with soap (the detergent without whitener), also the unwashed fabric, were judged too yellow to be acceptable as white.

Cotton fabrics 2, 3 and 4 had been treated with special resin finishes during manufacture. Repeated laundering caused definite color changes in these fabrics. No doubt the finishes influenced the direction and extent of the color changes.

For fabric 2, cotton batiste finished with epoxy resin and additives, the changes on laundering were toward darker colors, with colors slightly darker for the 60°C washes than for the 40°C washes. This graying effect was decidedly pronounced with the syndets containing pigments. Reflectance values for samples washed 30 times at 60°C with syndets A, B and C were 86.1, 84.4 and 80.9 percent, respectively, whereas values for those washed with the other detergents were about the same as the unwashed fabric, 89.5 percent.

As indicated by fluorescent and nonfluorescent color measurements, the whiteners included in the detergents had considerable effect on fabric 2 (Figure 1). Also, the pigments markedly colored the fabric and changes were greater for washes at 60°C than at 40°C. Samples washed 30 times at 60°C with syndet A were somewhat redder, those washed with syndet B were bluer, and those washed with syndet C were considerably greener than the unwashed fabric. Of the samples laundered at 60°C, only those washed with syndet B were considered acceptably white.

Fabric 3, cotton batiste, contained a fluorescent whitener with the melamine-ethylene urea resin combination finish that had been applied. Color measurements for the unwashed fabric (Table II) indicate the marked whitening effect of the fluorescent whitener included in the finish. Reflectance for this fabric (91.5 percent) was highest of the test fabrics in the study. Although laundering resulted in some decrease, reflectance values remained high, ranging from 88.1 to 90.9 percent for the 60°C washes.

On repeated laundering of fabric 3, syndets B and C had some influence on the final color; syndet A had little effect on color (Figure 1). Results for the two washing temperatures were similar. Apparently syndet A and soap washed out some of the whitener from the finish, whereas syndets B and C gave additional fluorescence and blueness to the fabric. Syndet D produced almost no changes in the fabric.

On visual examination, both the unlaundered and laundered fabric appeared acceptably white. Arrayed in decreasing order of acceptability, samples washed with syndet B were first, followed by those washed with syndets C, D, and A, the unwashed fabric, and last, the samples washed with soap.

Fabric 4, cotton sateen, was finished with a dimethylol ethylene urea resin, additives and fluorescent whitener. Reflectance for this finished cotton (83.8 percent) was somewhat lower than that for fabric 3 (91.5 percent). Laundering gave increased reflectance, and samples washed with detergents without

pigments had slightly higher reflectance than those washed with detergents containing pigments. The color effects produced at both 60° and 40°C. (Table II) were much the same for this fabric as for fabric 3. Also, in visual ratings for acceptable whiteness, the two fabrics followed the same order of preference. All samples appeared acceptably white.

Fabrics 5, 6 and 7 were Dacrons in batiste, crepe, and tricot constructions, respectively, without special finish. Laundering these fabrics with the different detergents produced slight changes (Table II). The fluorescent whiteners and the pigments had little effect. Evaluated visually, these fabrics appeared too yellow to be acceptable as white.

In fabric 8, Dacron-cotton batiste without finish, the changes on laundering were similar to those in fabric 1, cotton sheeting. Colors for fabric 8, however, were somewhat gray; reflectance for samples washed at 60°C ranged from 83.7 to 84.4 percent (the unwashed fabric, 83.2 percent). As indicated in Figure 1, all the detergents as used here produced redder and bluer colors in this fabric. The fluorescent whiteners contributed markedly to whitening; the pigments had no effect on color. According to visual judgments, samples laundered at 60°C were acceptably white.

Fabrics 9, 10, and 11, nylon crepe, satin, and tricot without special finish, were quite yellow before washing, as indicated by color measurements (Table II). Laundering nylon crepe with the various detergents produced lighter, redder, and bluer colors in the fabric. The fluorescent whiteners reduced some of the yellowness. Apparently the pigments had no influence on the final colors. With the nylon satin (Figure 2, fabric 10), the fluorescent whiteners were somewhat effective in masking yellowness. Without the benefit of fluorescent whiteners, however, laundering caused increased yellowness in this fabric, also in the nylon tricot. The pink pigment of syndet A seemed to influence the color change in both fabrics.

Fabric 12, nylon-Dacron-cotton batiste, contained a fluorescent whitener in its urea-formaldehyde resin finish. Color readings (Table II) indicate the grayness of the unwashed fabric (82.1 percent); also, the marked whitening effect due to the fluorescent whitener in the finish. With repeated laundering, this fabric increased considerably in yellowness (Figure 2). Laundering apparently washed out much of the whitener and finish, with more removed at 60°C than at 40°C. At 60°C, the fluorescent whiteners included in the syndets helped to whiten the fabric, since samples washed with the syndets were less yellow than those washed with soap. The pigment in syndet C had some influence on color.

EFFECT BY TYPE OF FIBER——Figure 3 is presented for convenience in comparing effects of laundering on fabrics of different fiber types. It shows the fluorescent color effects produced in the test fabrics by 30 washes at 60°C with syndet A. On laundering with this syndet, the fabrics of each fiber type as used in this study tended to change to the same color area. This grouping of fabrics of a fiber type is similar for each detergent.

Cotton fabrics 1, 3, and 4 and Dacron-cotton fabric 8 washed with syndet A (Figure 3) had much the same final color measurements in the red-blue area, although values for the unwashed fabrics were not similar. Cotton fabric 2, on the other hand, behaved differently from the other cottons. As indicated previously, the finish on this fabric no doubt altered the direction of the change, especially for samples washed with syndets containing pigments (syndets A, B, and C).

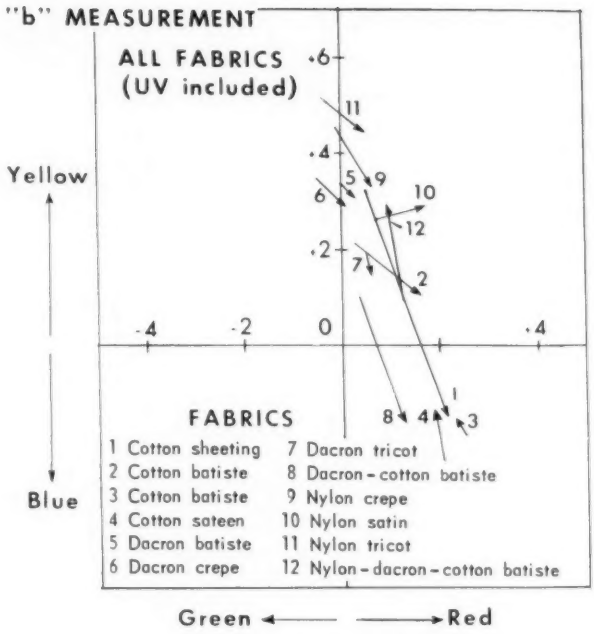

Figure 3
Relationship between yellow-blue ("b") and red-green ("a") measurements (UV included) for all fabrics washed 30 times with syndet A at 60°C

Dacron fabrics 5, 6, and 7 changed slightly on laundering regardless of the detergent used. Final colors for samples washed with syndet A were mostly yellow and had little red-greenness in them.

Nylon fabrics 9, 10, and 11, and nylon-Dacron-cotton fabric 12 changed on laundering toward the same color area. Final colors were in the yellow-red quadrant.

VISUAL RANKINGS COMPARED WITH INSTRUMENT MEASUREMENTS——For each of the four fabrics examined, visual rankings were the same whether the samples were viewed in north daylight or under the daylight lamp with added ultraviolet. Such evaluations are not very precise and the observers may have been influenced by redness or greenness in the fabrics. These visual rankings for whiteness, however, compare well with the instrument measurements of yellow-blue "b" (UV included) for the same samples. The relationships are shown in Table III.

By viewing the laundered samples under ultraviolet light, an attempt was made to evaluate visually that part of the whitening effect due to fluorescence. In general, the visual rankings for brightness of the fluorescence (Table III) follow the same order as the calculated fluorescence values obtained from instrument readings of the same samples. As reported here, the fluorescence for each laundering condition is the difference between the yellow-blue "b" (UV included) measurement and the corresponding "b" (UV excluded) measurement.

SUMMARY

The fluorescent and nonfluorescent color effects produced in nearly white unsoiled fabrics of cotton, Dacron and nylon by repeated laundering with household detergents containing pigments and fluorescent whiteners were evaluated by the color difference meter, modified with filters. Measurements effectively indicated the

TABLE III

Relationship between visual rankings and yellow-blue ("b") measurements in fabrics washed 30 times, arranged in decreasing order of whiteness or brightness according to visual ranking

Detergent and washing temperature	Fabric 1, cotton sheeting: Ranking in north daylight[1]	Fabric 1, cotton sheeting: Yellow-blue "b" UV incl	Fabric 1, cotton sheeting: Ranking in ultraviolet	Fabric 1, cotton sheeting: Fluorescence[2]	Fabric 3, cotton batiste: Ranking in north daylight[1]	Fabric 3, cotton batiste: Yellow-blue "b" UV incl	Fabric 3, cotton batiste: Ranking in ultraviolet	Fabric 3, cotton batiste: Fluorescence[2]
60°C Wash								
Syndet B	1	−4.4	1	6.6	1	−4.2	1	7.0
Syndet C	2	−2.8	2	5.1	2	−3.2	2	5.9
Syndet D	3	−1.6	3	3.8	3	−1.9	3	5.0
Syndet A	4	−1.4	4	3.6	4	−1.5	4	4.6
Soap	5	+1.6	None	—	5	−0.9	5	4.2
40°C Wash								
Syndet B	1	−2.4	1	5.2	1	−3.6	1	6.5
Syndet C	2	−3.3	2	6.0	2	−3.4	2	6.3
Syndet D	3	−1.1	3	3.9	3	−2.5	3	5.8
Syndet A	4	−0.3	4	3.2	4	−1.6	4	5.2
Soap	5	+2.4	None	—	5	−1.1	5	4.5

Detergent and washing temperature	Fabric 8, Dacron-cotton batiste: Ranking in north daylight[1]	Fabric 8, Dacron-cotton batiste: Yellow-blue "b" UV incl	Fabric 8, Dacron-cotton batiste: Ranking in ultraviolet	Fabric 8, Dacron-cotton batiste: Fluorescence[2]	Fabric 10, nylon satin: Ranking in north daylight[1]	Fabric 10, nylon satin: Yellow-blue "b" UV incl	Fabric 10, nylon satin: Ranking in ultraviolet	Fabric 10, nylon satin: Fluorescence[2]
60°C Wash								
Syndet B	1	−3.1	1	3.6	1	+1.7	1	2.6
Syndet C	2	−2.3	2	2.7	3	+2.0	3	2.4
Syndet D	4	−1.2	4	1.6	2	+1.8	2	2.4
Syndet A	3	−1.5	3	1.9	4	+3.0	4	1.7
Soap	5	−0.6	None	—	5	+3.6	None	—
40°C Wash								
Syndet B	—	—	—	—	3	+2.5	2	1.5
Syndet C	—	—	—	—	2	+2.6	1	1.6
Syndet D	—	—	—	—	1	+2.6	3	1.2
Syndet A	—	—	—	—	4	+2.7	4	1.0
Soap	—	—	—	—	5	+4.4	None	—

[1]Visual ranking of samples for whiteness was the same whether viewed in north daylight or under Macbeth Examolite, Type C-4D-UV. Rankings from 1 to 5 are in decreasing order of whiteness.

[2]Fluorescence (or brightness) is the difference between the yellow-blue "b" (UV included) measurement and the corresponding "b" (UV excluded) measurement.

color changes and the contribution of fluorescence to whiteness. The results compared well with visual observations, that is, rankings for whiteness made by viewing the laundered fabrics in north daylight or under the daylight lamp with added ultraviolet, and rankings for brightness of the fluorescence made by viewing them under ultraviolet light.

The detergents produced widely different effects on the fabrics, ranging from considerable improvement in whiteness in some instances to development of grayed blue-green colors in others. Some fabrics showed almost no change in color after 30 launderings.

The detergents with pigments, compared with those without pigments, had a graying effect on the cottons. The effect was especially pronounced on the cotton finished with epoxy resin and additives. Also, on this fabric definitely redder, bluer and greener colors developed. The pigments had some influence on the nylon-Dacron-cotton fabric with urea-formaldehyde finish but practically no effect on final colors of the other nylon and Dacron fabrics that were studied.

The fluorescent whiteners included in the detergents markedly whitened the unfinished cotton. On the resin-treated fabrics, the whiteners produced less improvement and their effectiveness varied with the finish. On the nylon fabrics, the fluorescent whiteners masked some of the yellowness, but on the Dacron fabrics they had little effect.

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(2) Furry, M S, Bensing, P L, Kirkley, J L, Taube, R K, Poole, N D, and Ross, E S, "Evaluating the Effectiveness of Fluorescent Whiteners and Oxidizing Bleaches on Cotton. Part I—Unsoiled Swatches Washed in Launder-Ometer. Part II—Naturally Soiled Pillowcases Washed and Dried in Household Equipment," *Am Dyestuff Reptr 48*, No. 8, P59-P73 (1959).

(3) Hunter, R S, "Photoelectric Color Difference Meter," *J Optical Soc Am 48*, 985-993, illus (1958).

ADR ABSTRACTS

Facts about Scotchgard, Fabric-stain Repeller

Anon, *New Zealand Textile J*, Autumn, 1960, p 61

Scotchgard stain repeller, developed by the Minnesota Mining & Mfg Co, is a colorless, odorless coating which may be applied to textiles and other substances. It is unaffected by extremes of heat and cold, and is immune to the effect of sunlight, infrared and ultraviolet rays, and the oxygen of the air. It is said to be completely harmless, and produces no reaction on the human skin.

Scotchgard is a fluorochemical, a man-made union between fluorine and carbon. It is incompatible with both water and oil. When it is applied to either light or heavy weight fabrics, it prevents stain-producing liquids from penetrating the surface. At the same time it does not affect the hand, "breathing quality", or appearance of the fabric in any way, it is said.

Fabrics treated with Scotchgard stain repeller will retain their stain-repellency even after five or more vigorous treatments in commercial drycleaning.

The makers claim that fabrics will live longer and look better when treated with Scotchgard, but they point out that the treatment does not entirely do away with the necessity for normal cleaning processes in the interests of cleanliness and hygiene.

Dyeing of Acrylics in Yarn Form

Gaunt, J F, *Dyer* 123, 190, Jan 29, 1960

Practically all the acrylic yarn dyed so far in England, the author states, has been of the high-bulk type.

Yarn produced by the Turbo-stapler system is generally believed to be the best for hosiery purposes, but from dyeing viewpoint the problems are much the same whether the yarn has been produced in this way, or from a mixture of high-shrink and normal staple, or *via* the Pacific converter. In all cases the yarn gives 18-25 percent shrinkage in boiling water.

For dyeing acrylic yarns the only type of machine which has been used to any significant extent is the double-stick hank-dyeing machine.

As the acrylic fibers have a lower sp gr than wool, yarns produced from them are more buoyant, and these fibers become thermoplastic at temperatures above 80°C, and are thus readily distorted. It is, however, necessary to exceed 80° during the dyeing of acrylics, since below this temperature the structure of the fiber is closed and the dyes cannot penetrate. Above 80° the structure is open and the dye molecules are able to enter and leave fairly readily.

Another problem in dyeing acrylics is that the hanks are very rigid while in the dye liquor, which tends to flow around instead of through them. This raises a dilemma, since increasing the flow of liquor to penetrate the yarn tends to cause undue disturbance to the hanks.

Whether the yarn is relaxed in steam or boiling water before dyeing, or is dyed directly without previous relaxation, it must be borne in mind, the author says, that at all times the yarn must be maintained in the freest possible condition.

For dyeing hosiery yarn only two groups of dyes are used: the disperse and basic colors. For pale and medium shades the disperse dyes give a very good fastness to light and washing in a wide range of shades. The main defect is their lack of building-up properties. For dyeing heavier shades, the alternative is to use basic dyes. Special precautions have to be taken to avoid unevenness, as follows:

1) Control of temperature, particularly around the critical point of 75-80°C, and of pH, usually between 4.5 and 5.5.

2) Use of cationic retarding agents.

3) Forming complexes of the dye with an anionic aggregating agent from which the dye is slowly liberated to the fiber.

•

New Ideas in the Application of Phthalocyanine Derivatives to Textiles

Gund, F, *J Soc Dyers Col* 76, 151-8, March, 1960

Practical experience with the monomeric diiminoisoindolines and the metal-polyisoindolines is described by the author, and the differences between Phthalogen dyes of these two types are discussed in connection with their dyeing characteristics and their methods of application.

New Phthalogen products based on a monomeric compound of analogous structure to the diiminoisoindoline, but containing an additional heterocyclic ring, are described. Photomicrographs of cross-sections of cotton and rayon fibers padded and printed with these dyes are included.

Perhaps the most interesting new product described in this paper is Naphthol AS-FGGR. This product, from point of view of application technique, belongs to the azoic class of dyes, but its outstanding properties, ie, clarity of color and high fastness to light, can be attributed to the phthalocyanine ring from which it is derived.

The molecule of phthalocyanine has been linked with a coupling component which produces a yellow with diazotized fast color bases. This combination of a blue dye and a yellow dye in the same molecule gives pure greens of remarkable tinctorial strength, with a lightfastness of at least 6 and excellent washfastness. The fastness to chlorine, however, is only moderate. The structure of this combined molecule is given.

Naphthol AS-FGGR, dissolved in caustic soda, has practically no affinity for cellulosic fibers, and is only suitable for padding. The usual azoic diazo components couple with it to yield shades ranging from the brilliant green to black-brown.

The new Naphthol is of little interest as a ground for the printing of fast bases, but it may be used in direct printing by the Rapidogen method. At present there are three Rapidogen Greens of this type on the market. Instructions are given for printing with these products. Other classes of dyes (Aniline Black, vat dye leuco esters, Phthalogen dyes and reactive dyes) may be printed alongside the Rapidogens.

It is pointed out that this is the first time that the range of azoic coupling components has included a member which provides clear yellowish greens possessing good overall fastness properties.

•

Manufacturing Malpractices (Don't Always Blame the Dye)

Thuemmel, H, *Dyestuffs* 43, 171-6, June, 1960

In this article the author refers specifically to worsted and woolen goods and their blends, but some of his suggestions could be applied to the textile industry in general and to all types of fibers.

At times it becomes necessary to change the source of the mill's raw material supplies. Under these circumstances it is good practice to investigate the new material fully in regard to shrinkage, whiteness, dye affinity, ability to spin, tensile strength, and other criteria for specific purposes.

If it is necessary to start using wholly new stock in the middle of the manufacturing process, it should be used a little at a time at first and closely watched all along the various processes.

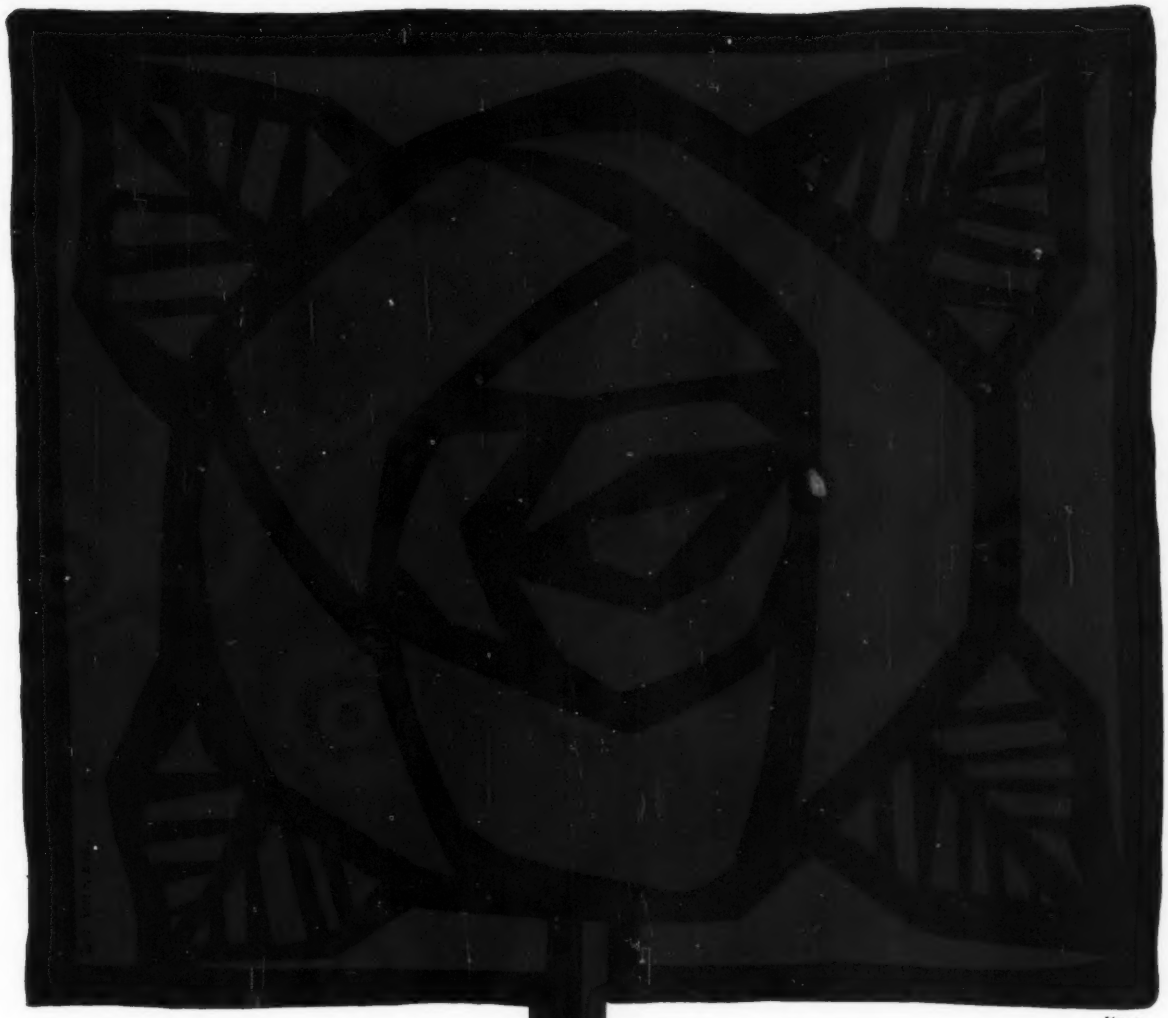
Water-damaged wool can sometimes be bought at a bargain price, but if the water damage was done by the Fire Department, the wool may have been scorched, will be tender, and will not spin properly.

Purchased wool waste must be examined to determine presence of synthetic fibers. Identification stains are used to advantage for this purpose. Colored wool may contain fibers lacking in crockfastness, and may require scouring. If it must be stripped for the light shades, it is best, for greatest improvement, to strip in the raw stock. However, colored waste that has not been stripped will spin better than stripped waste. If the waste is so poor that it will not stand both stripping and dyeing, it is best to dye it to a darker shade.

Carbonizing of the wool, to remove burrs and other vegetable matter, may be done before or after dyeing. The author considers it safer to carbonize after dyeing (less "seconds"), using dyes which are suitable for this purpose. If carbonizing is done on the raw stock, the wool will not spin as well.

In dyeing heavy shades, it should be kept in mind that these need a better wash than lighter shades, to remove all unattached dye.

Dark brown, navy and black shades in the wool waste occasionally cause poor spinning and a harsh hand. This is because they are usually redyes and have already been subjected to the boiling operation of dyeing two or more times.



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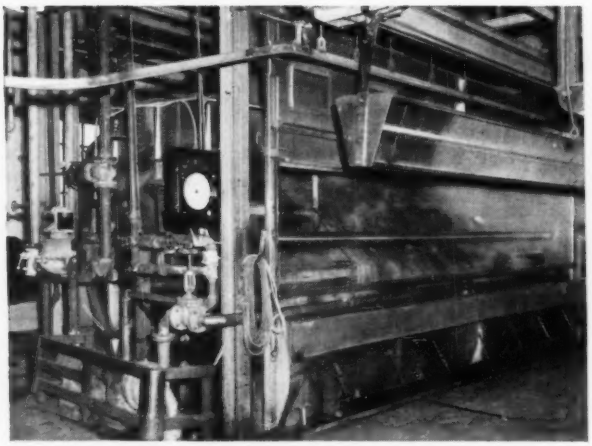

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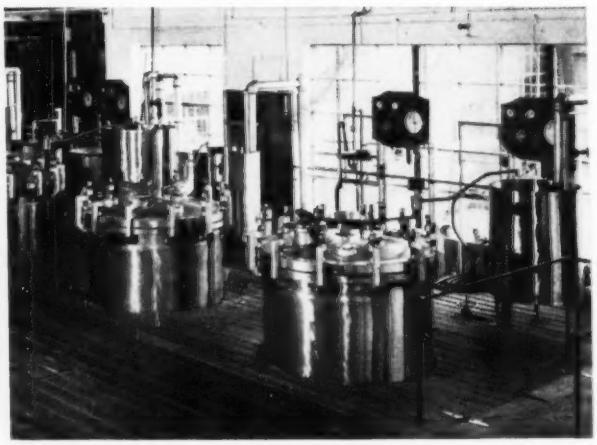

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January 23, 1961 No. 2

1960 National Convention———

THE MONFORTS REACTOR— A VERSATILE CONTINUOUS DYEING MACHINE FOR SYNTHETIC FIBER FABRICS*

FRED FORTESS, JAMES E TORBET, GEORGE C WARD, JOSEPH S WARNER

Celanese Fibers Co

A Division of Celanese Corp of America

The Monforts Reactor machine, previously described in *American Dyestuff Reporter*, May 16, 1960 (p 351), was selected as having a great potential for economically and continuously handling short runs in both the cotton and synthetic dyehouses. In many of the pilot-plant trials, the European experience with efficient desizing, vat, sulfur, and vat-sulfur dyeing of cotton and rayon were confirmed. Major emphasis was placed on reserve, cross and union dyeing of blends and combination fabrics containing Arnel triacetate or acetate with cotton or rayon. Commercially feasible processes are available using fixable direct dyes or fiber-reactive dyes on cotton or rayon, reserving or cross dyeing the Arnel or acetate with disperse dyes from a common bath containing suitable swelling agents.

For Arnel triacetate, the use of an aqueous dyebath containing 20-25% diacetone alcohol and 5% phenyl glycol ether makes possible heavy shades including navy in 10 seconds on the Monforts Reactor. This same bath raises the safe ironing point of triacetate fabrics from 190°C to 230°C, thus eliminating the need for a separate heat treatment.

A method has been developed for continuously dyeing triacetate black on this machine with 30 seconds residence time, by simultaneously applying a stabilized diazo base and beta-oxynaphthoic acid.

The processing of a wide variety of polyamide and polyester continuous filament fabrics, and spun fabrics based on polyamide, acrylic, nytril and polyester fibers on the Monforts Reactor is described. The advantages and disadvantages of processing sheer continuous filament fabrics, corduroys, pile and tufted fabrics, and heavy upholstery fabrics are discussed.

INTRODUCTION

THE Monforts Reactor is a relatively simple machine for applying a high concentration of energy in wet processing for desizing, bleaching, oxidizing or reducing reactions, dye penetration, and thermal stabilization under easily controllable conditions of time, temperature and tension. The primary purpose of this paper is to assess the economics of this machine for the various wet processes, as well as to describe its versatility in handling a wide variety of fabrics containing fibers normally processed in the dyehouse for synthetic fabrics.

In the dyehouse primarily devoted to cotton fabrics, continuous desizing, bleaching, dyeing and finishing processes have been developed which are most economical when applied to long yardage runs of relatively standardized fabric constructions. 50,000 yards per color is always a good round number to use for optimum economy. Any merchandising or marketing considerations which require almost instantaneous changes in color ranges and hand of fabric are resisted in the cotton dyehouse because of relatively high cost of change-over in the continuous processes now employed. On the other hand, the synthetics dyehouse founded on the jig and winch dyeing of batches of 1000 to 2000 yards per color is more readily adaptable to rapid changes in fiber composition and fabric construction.

The Marketing Division of the Celanese Fibers Co has recognized the need for bridging the gap between the low-cost, high-volume continuous processing of the cotton dyehouse and the higher-cost, but more adaptable synthetics dyehouse. The responsibility for assessing the usefulness on fabrics containing Celanese synthetic fibers of the several continuous and semicontinuous processes which have recently become available was assigned to the Dyeing and Finishing Laboratories of Celanese Fibers Co's Applications & Product Development organization.

During the last four years, exploratory trials were run on the DuPont Pad Steam Range (*1*), the Standfast Molten Metal Machine (*2*), the Svetema Swedish Pad-Roll Machine (*3*), DuPont's Thermosol Process (*4*), and A Monforts Maschinenfabrik's Monforts Reactor Machine (*5*). Based on this experience, the Monforts Reactor was selected as having greater potential for handling cotton and cotton blends with synthetic fibers in the cotton dyehouse and a wide range of synthetic fabric constructions in the synthetics dyehouse.

This paper reports our experience with the semicommercial-scale Monforts Reactor installed October 1959 in the Celanese Fibers Co's Dyeing & Finishing Development Pilot Plant at Charlotte, NC. During this past year more than 100 trials were carried out on a wide variety of fabrics of different fiber composition. Table I outlines the type of wet processes and fibers involved. On several occasions, industry-wide demonstrations were made at which the cotton

*Presented October 6, 1960 by Fred Fortess at the 1960 AATCC Convention held at the Sheraton Hotel, Philadelphia, Pa

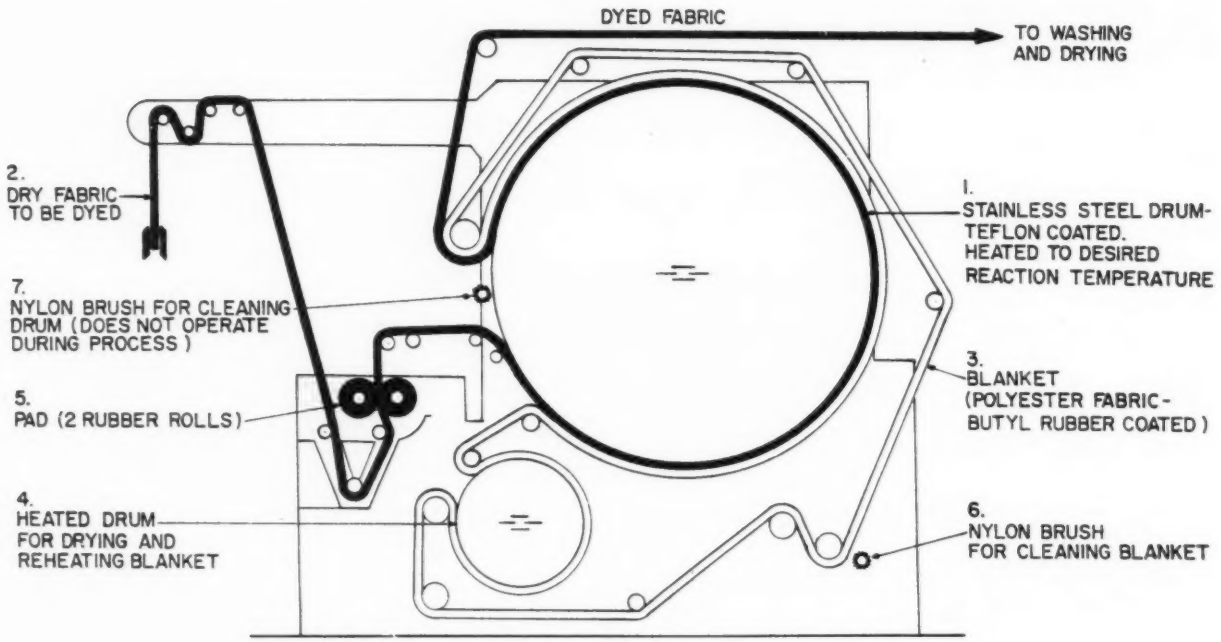
DYED FABRIC
TO WASHING AND DRYING
2. DRY FABRIC TO BE DYED
1. STAINLESS STEEL DRUM-TEFLON COATED. HEATED TO DESIRED REACTION TEMPERATURE
7. NYLON BRUSH FOR CLEANING DRUM (DOES NOT OPERATE DURING PROCESS)
3. BLANKET (POLYESTER FABRIC-BUTYL RUBBER COATED)
5. PAD (2 RUBBER ROLLS)
4. HEATED DRUM FOR DRYING AND REHEATING BLANKET
6. NYLON BRUSH FOR CLEANING BLANKET

Figure 1
Monforts Reactor (side view)

and synthetic dyehouse representatives, as well as the dye and chemical manufacturers, were able to observe and discuss specific trials of interest to them. Many of the questions raised as a result of these discussions became part of the experimental program summarized in this paper.

At the time of the presentation of this paper, the Celanese pilot-plant machine was the only Monforts Reactor in operation on the North American continent. However, one commercial machine has already been installed and another is on order, and the purchase of several others is being discussed.

DESCRIPTION OF MONFORTS REACTOR MACHINE

The best description of the Monforts Reactor available to American dyers was presented by Joachim C Roehl (5) in the paper presented before the 38th National AATCC Convention in 1959. Figure 1 is a schematic side view drawing of the machine illustrating the essential parts and the flow of fabric from padding and heating to washing. The only essential difference between the machine installed in the Celanese facilities and the commercial unit is that the major heating drum in the pilot-plant model is 40 inches in diameter whereas the drum in the full-scale machine is about 100 inches in diameter.

The central feature of the machine described in Figure 1 is the large double jacketed cylinder (1) which is Teflon-coated. This cylinder is capable of being heated by steam injection up to 150°C. The fabric (2) to be treated on this drum is covered during its contact with the drum by a continuous blanket (3) prepared from a stable construction fabric laminated with a heat- and solvent-resistant butyl rubber. The blanket dimensions are six to eight inches wider on each side of the fabric, thus providing a pressure seal to hold in the water and/or solvent vapors. To minimize any difference in heat distribution between the face and back of the fabric being treated on this machine, which may result in facing of dyed fabric, a preheater roll (4) raises the temperature of the rubber blanket to an empirically determined temperature above the temperature of the drum surface.

The fabric to be chemically treated or dyed on the machine is first impregnated on a two- or three-roll padder (5) arranged horizontally. The trough should have very low volume capacity and be jacketed for heating or cooling, depending upon the process involved. To prevent mark-off of color from the blanket onto the fabric, a continuous nylon brush washing device (6) is attached to the exit end of the machine. This soft nylon brush, when run against the blanket in warm water, does a very effective job of cleaning the blanket, and no trouble has been experienced with mark-off from the blanket. However, there has been some trouble with mark-off from the drum with certain dyebaths. To facilitate rapid cleaning of the drum in going from one shade to another, a nylon brush arrangement (7) is placed against the opening of the drum face during the cleanup operation only. Running cotton leader cloth through caustic and hydrosulfite has also been effective in cleaning.

In operation, the fabric containing 50-100% water and/or solvent from the pad bath enters into the machine and is sealed between the drum and the continuous rubber blanket. During the six to 15 seconds residence time most of the water is vaporized and is present as a steam atmosphere held in by the six- to eight-inch overlap of the rubber blanket. The machine, therefore, behaves essentially as a high-temperature pad-steam process.

EXPERIMENTAL

Some of the more than 100 trials on the Monforts Reactor were carried out with cotton fabrics primarily to check the European experience on desizing, developing of padded vat pigments, and sulfur dyeing. However, major emphasis in this paper is

TABLE I
Fibers and processes on the Monforts Reactor

Fiber Type	*Fabric Type*	*Dyeing & Finishing Processes*
Cotton	Toweling	Dyeing with sulfur dyes
	Drapery fabrics	Dyeing with fast-to-light direct dyes
	Corduroy	Vat-sulfur
	Cord	Vat dye reduction
Rayon	Taffeta	Dyeing with direct dyes
	Toy plush	Bleaching
	Upholstery cloths	Dyeing with fast-to-light directs
Acetate	Satin	Disperse dyes
	Rayon blends	Unions, reserves, cross dyes
Arnel	Cotton blends and combination fabrics	Unions, reserves, cross dyes
	Sharkskin & taffeta	Stabilization and pretreatment for dyeability
	Arnel/cotton check	Developed black
Nylon	Taffeta	Disperse dyeing, acid dyeing
	Tricot	Acid dyeing
Darvan	Cotton blends	Disperse dyeing, union dyeing
Fortrel and Dacron	Taffeta	Disperse dyeing
	Blends & Combination fabrics	Cross dyeing
Orlon) Zefran) Acrilan)	Shirtings	Cationic dyes, disperse dyes

TABLE II
Disperse dyestuffs for the dyeing of triacetate on the Monforts Reactor

Blues:	Interchem Acetate Brilliant Blue NSP
	CI Disperse Blue 7
	Eastman Fast Blue B-GLF
	Latyl Blue BG
Reds:	Eastone Brill Fast Red 2B-GLF
	Eastone Fast Pink 3B-GLF
	CI Disperse Red 35
	Interchem Acetate Red GSF
	Eastone Fast Pink B-GLF
Yellows:	Eastman Fast Yellow 2R-GLF
	CI Disperse Yellow 33
	Eastman Fast Yellow 8GLF
	Setacyl Yellow PFG (1% max solubility)

TABLE III
Disperse dyestuffs for the dyeing of acetate

Hisperse Blue NBNJ
Hisperse Red RH
Hisperse Scarlet BH
Hisperse Yellow GH
Eastone Brill Fast Red 2B-GLF
Eastone Fast Red N-GLF
Eastman Fast Blue B-GLF
Eastman Fast Yellow 2R-GLF
CI Disperse Red 15
Cibacete Dark Blue RB
Foron Red RBLL
Foron Yellow 3RLL
Foron Scarlet 3GFL

on blends and combination fabrics of Arnel triacetate or of acetate, with cotton or rayon.

The application of disperse dyes to the hydrophobic fibers, such as Arnel, Dacron, Fortrel, and Darvan, etc, requires the use of solubilizing bath systems. After considerable laboratory work, a procedure was established for Arnel wherein selected disperse dyestuffs are dissolved in an aqueous medium containing 25% diacetone alcohol and 5% phenyl glycol ether at 85°C. This solution is padded through the semiworks model Reactor at 15 yards per minute, using a large roll temperature of 140°C and a small roll temperature of 170°C. After passage through the Reactor, the fabric is washed in one gpl of hot soap, rinsed and dried. The Arnel present in the fabric dyes a heavier shade than that obtained using the same dye recipe by conventional means. The dyebath components of this solution will cost 40¢ per gallon. For fabrics of the normal weights, it can be expected that the solvent costs will run in the neighborhood of 1.7¢ per yard.

This solvent solution is too reactive for use on secondary acetate, and should any acetate be present in the fabric, it will be seriously stiffened or tendered. Any cotton or rayon present in the fabric will be completely reserved, providing the fabric is washed sufficiently after leaving the Reactor. This reserve is dependent, of course, on the selection of dyes which reserve cellulose. If an Arnel and cotton fabric is passed through a cold solution of selected cotton dyes and then through the Reactor, the cotton will be dyed leaving the Arnel white. Dyestuff consumption has been shown to be equal to or less than pad/jig dyeing. If the fabric contains acetate or polyester fibers along with cotton or rayon, these fibers will be completely reserved to the selected direct dyes.

TABLE IV
Disperse dyestuffs for the dyeing of polyester

Blues:	Latyl Blue RL
	Latyl Blue RB
	Eastman Fast Blue B-GLF
	Latyl Blue BG
	Latyl Blue 4R
	Latyl Violet 2R
Reds:	Latyl Cerise B (Pdr)
	Latyl Red B
	Latyl Scarlet FGS
	Acetamine Rubine B
Yellows:	CI Disperse Orange 3
	Latyl Yellow 3G
	CI Disperse Yellow 23
	Latyl Orange 3R
	Pr 625

TABLE V
Direct dyestuffs for the dyeing of cotton and rayon

Pr 629
Pr 628
Superlitefast Rubine WLKS
Superlitefast Blue 8GLN
CI Direct Blue 100
CI Direct Red 89
CI Direct Yellow 50
CI Direct Orange 34
CI Direct Red 80
CI Direct Blue 80
CI Direct Blue 94
CI Direct Blue 79

TABLE VI
Reactive dyestuffs for the dyeing of cotton and rayon

Cibacron Scarlet 2G
Cibacron Blue 3G
Cibacron Brilliant Orange G
Procion Orange G
Procion Red 2B
Procion Blue 3GS
Procion Yellow R
Remazol Brilliant Blue R
Remazol Yellow RT
Remazol Red Violet R

As a consequence of the two processes described above, it is entirely feasible to union-dye or cross-dye a triacetate/cotton fabric. If it is desired to dye secondary acetate on the Reactor, the use of Hisperse colors (Interchem) or the Microfine dyestuffs (Ciba) are preferable. These colors are dissolved in 7% diacetone alcohol and 2% phenyl glycol ether, and padded at 35°C. Direct color can be added to this bath to dye any cellulosic fiber present.

Experiments have shown that, in dyeing a polyester-containing fabric, a bath containing 30% diethylene glycol, 5% benzyl alcohol, and 1% meta cresol at 85°C, plus selected disperse colors, gives good results and medium shades at least are obtainable.

Polyamide-containing fabrics have been dyed light and medium shades by using nylon special dyes, such as the Nylanthrene colors (Althouse) and neutral (metallized) dyes such as the Irgalan colors (Geigy), and also with selected disperse dyes.

Table II is a list of disperse dyestuffs which have been found suitable for the dyeing of triacetate on the Monforts Reactor.

Table III contains additional disperse dyestuffs which have been found suitable for the dyeing of acetate on the Monforts Reactor.

Disperse dyestuffs which have been found siutable for the dyeing of polyester on the Monforts Reactor are listed in Table IV.

Direct dyestuffs which have been used successfully for the dyeing of cotton and rayon on the Monforts Reactor are listed in Table V.

Reactive dyes for cotton and rayon are listed in Table VI.

DYEING OF ARNEL LEAVING COTTON WHITE——The following is a procedure for dyeing the Arnel navy in an Arnel/cotton checkster fabric, reserving the cotton. The pad bath was made up containing:

3% Interchem Acetate Brill Blue NSP
0.78% Eastone Brill Fast Red 2B-GLF
1% Eastman Fast Yellow 2R-GLF
25% diacetone alcohol (acetone-free)
2% phenyl glycol ether
1% Conco Inhibitor FR.

Pad bath temperature: 85°C.
The first three wash boxes contained one gpl soap at 95°C.
The fourth contained a hot rinse.
Large roll temperature: 140°C.
Small roll temperature: 170°C.
Speed: 15 yards per minute.
The cotton was then cleared on a jig in a bath containing: two gpl soap at 95°C to which had been added two gpl sodium hydrosulfite when hot.

DIRECT DYEING OF COTTON LEAVING ARNEL WHITE——The following is a procedure for dyeing a dark blue shade on cotton, reserv- the Arnel:

3% Cuprofix Blue CBL
1% Cuprofix Black OB
0.15% sodium chloride
0.2% Sandozol N.

Dyebath temperature: 50°C.
Large roll temperature: 130°C.
Small roll temperature: 165°C
Speed: 15 yards per minute.
The first three wash boxes contained 25% common salt at a temperature of 95°C.
The fourth wash box was a warm rinse.

COST ESTIMATE OF DYEING COTTON, LEAVING ARNEL WHITE——

2500 yards Arnel/cotton checkster 45" wide, four oz/sq yd
Arnel—white
Cotton—navy

0.25% Sandozol N	@ 22¢	$ .44
50 lbs common salt	@ 2¢/lb	1.00
		$1.44

Dyestuff:
14 lbs (2%) CI Direct Blue 2 @ 93¢ $11.02

Labor:
45 yards per min—55 min plus 25% downtime
Three operators @ $2.25 per hour $ 8.55

$21.01
0.84¢ per yd

ONE-BATH CROSS DYEING OF ARNEL/COTTON FABRICS —— The following is a procedure for dyeing an Arnel/cotton checkster:

Arnel—red
Cotton—blue

A pad bath was prepared containing:
3% Eastone Brill Fast Red 2B-GLF
3% Cuprofix Blue CBL
25% diacetone alcohol (acetone-free)
5% phenyl glycol ether.

Pad bath temperature: 85°C.
Large roll temperature: 130°C.
Small roll temperature: 165°C.
Speed: 15 yards per minute.
The first three wash boxes contained 25% common salt at a temperature of 95°C.
The fourth wash box was a warm rinse.

COST ESTIMATE OF CROSS DYEING ARNEL/COTTON FABRICS ON THE MONFORTS REACTOR——

2500 yards Arnel/cotton chambray or checkster, 45" wide, four oz/sq yd
Arnel—red
Cotton—blue

Chemicals:

700 lbs of dye liquor required which will contain:		
175 lbs diacetone alcohol (acetone-free)	@ 17¢	$29.75
35 lbs phenyl glycol ether	@ 35¢	12.25
		$42.00
Chemical cost		1.68¢/yd

Dyestuffs:

8-3/4 lbs (1¼%) Eastone Brill Fast Red 2B-GLF	@ $3.71	32.46
8-3/4 lbs (1¼%) Cuprophenyl Blue ABL	@ 1.60	14.00
		$46.46
Dyestuff cost		1.86¢/yd

Labor:
45 yds per min—55 min plus 25% downtime
Three operators @ $2.25 per hour $8.55 0.34¢/yd
Plus overhead, profit, taxes, etc

3.88¢/yd

DEVELOPED BLACKS ON ARNEL——In 1958, Eastman Chemical Products Inc introduced a dyestuff known as Eastman Black T. This dyestuff is composed of diazotized and stabilized CI Disperse Black 9, to which the proper amount of beta oxynaphthoic acid has been added. Trials have been quite successful in using this dyestuff for obtaining blacks on acetate quickly on a jig or winch. A jig method has been worked out on Arnel, but work has not been particularly successful in dyeing Arnel with this dyestuff on the winch. It has been shown that this dyestuff is ideally adapted for processing on the Monforts Reactor. An excellent black on the Arnel portion of an Arnel/cotton checkster has been obtained using the following procedure:

4% Eastman Black T
5% ammonium chloride
25% diacetone alcohol (acetone-free)
5% phenyl glycol ether

Bath temperature: 60°C.
Speed: five yards per minute.
Large roll temperature: 145°C.
Small roll temperature: 170°C.
The first two wash boxes should contain 2½ gpl formic acid at 90°C.
The third and fourth should contain warm water.
Unless a very efficient washing range is in the line, additional soaping will be necessary, particularly if cotton or rayon is present in the fabric and is to be reserved.

DESIZING OF SYNTHETIC FABRICS——A rayon fabric was padded twice through:

0.5% Rapidase
0.3% detergent
2.0% Varsol

Pad bath temperature: 75°C.
Speed: 30 yards per minute.
Large roll temperature: 135°C.
Small roll temperature: 150°C.
The first wash box contained caustic soda at 95°C.
The second and third wash boxes contained 0.5 gpl Igepon T Gel at 95°C.
The fourth contained a hot rinse.
The fabric was then given a standard Hinnekens boil-off and frame dried.

When the fabric emerged from the Reactor, it was evident from iodine tests that the starch had been completely solubilized. Also much of the tint was lost during the Reactor run, which tint was subsequently completely removed in the Hinnekens boil-off. The dried fabric had a very soft hand, again indicating complete desizing.

PRETREATMENT OF ARNEL FABRICS——One of the most unique results discovered by the use of this machine was the fact that Arnel-containing fabrics may be pretreated to give the improved thermal properties characteristic of Arnel fabrics dry heat treated by standard means. A fabric was padded in 25% diacetone alcohol and 5% phenyl glycol ether at 80°C at a speed of 15 yards per minute, and run through the Reactor with the large drum temperature at 140°C and the small drum temperature at 160°C, followed by washing. When this treated fabric was dyed on the winch, it showed much better affinity and much less susceptibility to creasing than did the untreated fabric. Fabric so pretreated does not require subsequent heat treatment for improved ironing properties, dimensional stability, or crease resistance. This development is considered to be an important addition to the technology of dyeing synthetic fabrics which are normally heat set either before or after dyeing.

DYEING OF COTTON WITH SULFUR COLORS——The following is a procedure for dyeing a deep brown shade on cotton:

Pad at 50°C with a bath containing:
120 grams per gal So-Dye-Sul Liquid Brown AFCF
55 grams per gal So-Dye-Fide B
20 grams per gal caustic soda
One gram per gal Nekal BX.

Run at 25 yards per minute.
Passage through the Reactor should be followed by conventional oxidation with dichromate and acetic acid.

REDUCTION AND OXIDATION OF VAT PIGMENT PADDED COTTON FABRIC——The Reactor can be used for this process using the pad bath and conditions shown below after the fabric has been padded with a vat pigment:

25 gpl caustic soda
35 gpl sodium hydrosulfite
10 gpl Borax
10 gpl sodium sulfate
1.25 gpl Triton X-102.

Speed: 15 yards per minute.
Large roll temperature: 115°C.
Small roll temperature: 135°C.
Followed by conventional oxidation, rinsing and soaping.

DYEING A UNION NAVY ON ACETATE/VISCOSE —— A trial was run using the following procedure, which resulted in a good union navy shade on an acetate/viscose trouser fabric:

Pad bath contained:
2% Interchem Acetate Brill Blue NSP
0.78% Eastone Brill Fast Red 2B-GLF
1.30% Eastman Fast Yellow 2R-GLF
1.2% CI Direct Blue 22
1.2% CI Direct Blue 2
15% diacetone alcohol (acetone-free)
1% Inhibitor FR.

Temperature: 70°C

DYEING OF A POLYESTER/COTTON FABRIC —— Heavy-

shade dyeing of polyester-containing fabrics still leaves much to be desired. However, a good medium blue shade was obtained on the polyester component, leaving the cotton white. The procedure is as follows:

Pad bath contained:
2% Latyl Blue B
35% diacetone alcohol (acetone-free)
5% meta cresol
5% benzyl alcohol.
Temperature: 88°C.
Speed: five yards per minute.
Large roll temperature: 140°C.
Small roll temperature: 160°C.
The first wash box contained water at 95°C.
The second, one gpl of soap at 95°C.
The third, water at 95°C.
The fourth, water at 65°C.
The fabric was then further scoured on the jig in two gpl of soap.

The authors do not feel that this is as yet a commercial procedure, but it may indicate an approach to the problems of dyeing polyester-containing fabrics. A better swelling system is required for the heavy shade dyeing of polyester-containing fabrics.

DYEING WITH REACTIVE DYES ON COTTON, LEAVING ARNEL OR ACETATE WHITE———The following is a procedure used for dyeing cotton with fiber-reactive dyes:

2% Procion Brilliant Red 2B
0.2% Keltex
2% sodium bicarbonate
0.1% Triton X-100.
The pad bath was made up at 30°C and run at 15 yards per minute.
Large roll temperature at 125°C.
Small roll temperature at 160°C.
The first wash box contained water at 100°C.
The second and third wash boxes contained one gpl of Triton X-100 at 99°C.
The fourth a warm rinse.

This procedure gave a bright red shade on the cotton, leaving acetate-Arnel and polyester yarns well reserved.

Fiber-reactive dyestuffs of the hot-dyeing types have been applied successfully.

DISCUSSION

The essential feature of the Monforts Reactor, which is of interest to the synthetics dyehouse type of operation, is its ability to apply concentrated thermal energy under conditions of controlled tension, and uniform heat distribution across the width of the fabric. This machine performs all of the functions of the DuPont Pad-Steamer (*1*) on cotton fabrics but with the advantages of shorter yardage runs, faster conversion to the next shade or dyeing process, and reduced tension.

While this investigation verified the usefulness of the Monforts Reactor in applying vats, sulfur, direct and reactive dyes on suitable cotton and rayon fabrics, its most novel feature is the application of disperse dyes to hydrophobic fibers, such as acetate, Arnel, nylon in a full range of shades, and to Dacron, Fortrel, Orlon, Darvan, etc, in a light to medium range of shades.

Particular emphasis was given in this investigation to the one-pad bath dyeing of Arnel and cotton combination fabrics for the economical achievement of union cross and reserve color styling effects. These fabrics, whether the six ends 40/S cotton by six ends 200-denier continuous filament Arnel arranged in both warp and filling as a gingham or check fabric, or the 40/S cotton warp 200-denier continuous filament Arnel filling chambray construction, are now dyed primarily in the closed jig requiring six to eight hours dyeing time. The use of the diacetone alcohol—phenyl glycol ether dye pad bath makes possible heavy shade dyeing on Arnel, including navies and blacks, in a residence time on the Reactor of six to eight seconds at speeds estimated for the commercial scale machine of 40-50 yards per minute.

Now, as in the past, a wide variety of continuous filament warp fabrics, such as taffetas, sharkskins, satins, are subject to shadedness from selvedge to center limitations when dyed on the jig. The uniformity of heat distribution across the drum face of the Monforts Reactor makes possible the elimination of this serious dyeing problem.

However, there are a number of problems involved in operating the Monforts Reactor. Roehl's paper (*5*) stated: "It must be recognized that many parties interested in the Reactor are still afraid of problems of facing on their fabrics". Experience has shown that facing is one of the most serious problems on this machine. This is due to the fact that one side of the fabric comes in contact with a stainless-steel drum and the other side with a rubber-like blanket. There is a great difference in the heat transfer values of these materials. One of the ways to control this variation is by heating the blanket to a higher temperature than the roll, and Roehl (*5*) has suggested a difference of 16°C. We estimate that 25°C to 35°C is more nearly the required difference. Also, it is generally found that if an Arnel/cotton fabric is dyed with disperse colors, there will be some staining on the cotton. If care is not taken to clean up the cotton, it will be stained heavier on the drum side than on the blanket side. Generally more facing is experienced on cellulosic dyeings than on synthetic dyeings.

No trouble has been experienced with creases in fabrics run through the Reactor. However, the pad supplied by the Monforts Company did not have an expander bar below the nip. When running taffeta fabrics a serious creasing problem developed. It has been necessary to rebuild the pan to allow space to install an expander. With this alteration taffetas may be run satisfactorily.

It is appreciated that endedness is a matter that can be studied efficiently only in long runs, but in runs up to 500 yards no evidence of endedness was observed. Factors which must be considered in controlling endedness are:

a) The pad bath used should be small in volume. This is one of the features of the Monforts pad, which has a capacity of only five gallons. This means that the dye liquor is being used just about as soon as it is fed in, and there is not much chance of selective absorption of dyestuffs or other materials.
b) It is well to have a dyebath which does not have affinity at the temperature of padding. Thus for most pad work with direct colors, cold or warm solutions are used. For the dyeing of Arnel, it is necessary to use somewhat higher temperatures because of the danger of settling out of the dyestuff.

SUMMARY

One year of experimentation on a semiworks model of the Monforts Reactor has confirmed much of the European experience with this machine. It has been shown that:

1) The Reactor is an efficient machine for the desizing of a wide range of fabrics.
2) Sulfur colors may be applied to cellulosic fabrics.
3) Cellulosic fabrics, previously vat pigment padded and dried, may be reduced satisfactorily on this machine.
4) A wide range of direct cotton dyestuffs may be applied to cotton and rayon economically.

In addition, the versatility of this machine has been demonstrated with new dye classes on a variety of synthetic-fiber-containing fabrics:

1) Fiber-reactive dyes of both the cold and hot types may be applied to cotton and rayon.
2) Arnel triacetate may be effectively dyed with disperse dyestuffs using a pad bath containing 25% diacetone alcohol and 5% phenyl glycol ether.
3) A wide range of cross dyes can

be obtained by proper selection of direct cotton dyestuffs and disperse dyestuffs on fabrics containing acetate and a cellulosic, or triacetate and a cellulosic.

4) A disperse black can be dyed quickly and economically on Arnel triacetate by the use of Eastman Black T on the Monforts Reactor.
5) By proper selection of dyestuffs, a wide range of reserve effects may be obtained.
6) Arnel fabrics may be pretreated on the Monforts Reactor with diacetone alcohol and then later dyed on conventional becks or jigs, and have much greater dye affinity, give much more level dyeing, and do not require a heat setting treatment after dyeing.
7) Animal fibers may be dyed rapidly using selected acid dyestuffs.
8) Polyamide fibers may be dyed with selected disperse, acid, and premetalized dyestuffs.
9) Polyacrylic fibers may be dyed with selected cationic dyestuffs.
10) Polyester fibers may be dyed, at least light and medium shades, using a semisolvent-type bath with disperse colors.
11) Darvan dinytril fiber may be dyed with selected disperse dyestuffs.

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Special acknowledgment must be given to Wilfred T Normand, superintendent of our Dyeing & Finishing Pilot Plant, and Eugene W Offutt for their direct participation in the program.

The A Monforts Maschinenfabrik Co, and especially Joachim C Roehl, sales representative, have provided every cooperation in modifying and improving those mechanical shortcomings as they became apparent during the nine months of operation.

TRADEMARKS

The following trademarks and tradenames have been used in this paper:

EQUIPMENT
Monforts Reactor—A Monforts Maschinenfabrik

FIBERS
Acrilan—Chemstrand Corp
Arnel—Celanese Corp of America
Dacron—E I duPont de Nemours & Co, Inc
Darvan—Celanese Corp of America
Fortrel—Fiber Industries, Inc
Orlon—E I duPont de Nemours & Co, Inc
Zefran—The Dow Chemical Co

OTHER (in order of appearance)
Teflon—E I duPont de Nemours & Co, Inc
Hisperse—Interchemical Corp
Interchem—Interchemical Corp
Microfine—Ciba Co, Inc
Nylanthrene—Althouse Chemical Co
Irgalan—Geigy Chemical Corp
Latyl—E I duPont de Nemours & Co, Inc
Eastone—Tennessee Eastman Co
Setacyl—Geigy Chemical Corp
Cibacete—Ciba Co, Inc
Foron—Sandoz, Inc
Acetamine—E I duPont de Nemours & Co, Inc
Superlitefast—Althouse Chemical Co, Inc
Cibacron—Ciba Co, Inc
Procion—Imperial Chemical Industries Ltd
Remazol—Carbic-Hoechst Corp
Cuprofix—Sandoz, Inc
Sandozol—Sandoz, Inc
Rapidase—Wallerstein Co
Nekal—General Aniline & Film Corp
Triton—Rohm & Haas Co
Keltex—Kelco Co

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Daily News Record, May 23, 1960, Section 2, Page 20.

Membership Applications

Dec 22, 1960 - Jan 4, 1961

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Coleman R Pace—Lab tech, Southern Bleachery & Print Works, Taylors, SC. Sponsors: C C Bost, L M Wise Jr.

Junior

Elbert T Moore—Shift supv, Dye Dept, Amerotron Co, Barnwell, SC. Sponsors: W S Myers, J W Stallings.

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Transfer to Senior

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WESTERN REGION

Mid-West Section

Transfer to Associate

Sandra F Phillips—Steno typist, W M Welch Scientific Co, Chicago, Ill.

NOT AFFILIATED WITH A SECTION

Senior

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John G Evans—Dir of research, Bradford Dyers Association Ltd, Central Laboratories, Bradford, England. Sponsors: E Yeadon, G P Paine.

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1960 National Convention———

DYEING AND FINISHING OF MAN-MADE FIBERS IN A COTTON FINISHING PLANT*

HEYWARD V SIMPSON
Reeves Bros, Inc
New York, NY

INTRODUCTION

DURING the last decade we have witnessed the introduction, development, and tremendous sales growth of a wide variety of new man-made fibers. Indeed, today it seems that not a month passes without the announcement of a new fiber or new modification of one of the now familiar types.

All of our fibers, natural or man-made, have their respective strengths, and weaknesses. None are perfect. It is logical that many mixtures and blends are being produced in an effort to use the strong points of each individual component.

Certain of these new fibers in blends have added new areas of performance and wear to cotton, our greatest natural fiber, and as a result have received increasing acceptance.

One of the early blends to achieve general use was that of cotton with moderate percentages of nylon fiber, for fabrics with increased strength and resistance to abrasive wear. These fortified work-clothing fabrics are processed through our finishing plants with relatively minor changes from usual procedures.

Those changes which occur are in dyeing, consisting of selection of those vat colors which provide partial dyeing of the nylon, or in the case of the darker shades, and additional and separate dyeing of the nylon with selected acid-type colors by continuous or jig-dyeing procedures.

More recently, cotton-acrylic fiber blends have been introduced, and are finding a place for themselves in certain end-uses.

Processing flow changes for this blend are more pronounced. The hot caustic scouring step of cotton procedures is usually avoided. Many of the acrylic fibers withstand hot peroxide bleaching, however, and all seem to go through cotton mercerization satisfactorily.

An additional and separate dyeing procedure is necessary to dye most of the acrylic fibers. This usually means use of selected basic or dispersed type of colors at high temperature.

I might mention that the modified-type acrylic fibers have certain limitations on the temperature that they will withstand.

From the standpoint of yardage processed, the polyester-cotton blend is probably the most important. We have seen these fabrics progress from experimental pieces to millions of yards of fabric produced annually in the span of a few short years—a truly phenomenal growth rate.

Process flow changes required for this blend are somewhat similar to those for the acrylic-cotton blends. Caustic scour, hot peroxide bleaching must be avoided. Singeing is usually done after the polyester fiber has been dyed.

A separate, additional dyeing is usually necessary for the polyester fiber using selected dispersed- or dispersed-azoic-type colors at high temperatures with pressure or chemical dyeing assistants.

An additional heat-setting step is frequently required in finishing.

Nearly all of our great fiber producers make and sell either polyester- or acrylic-type fibers, backing their sales efforts with vigorous consumer advertising and promotion. It thus seems that there will be continuing growth in these blended-with-cotton fabrics for some years to come.

The processing of these blended fabrics offers an opportunity today and a challenge for tomorrow to the men and machinery of our great cotton textile finishing industry.

Now it is clearly beyond the scope of time alloted to discuss in detail the problems which arise from this work. I hope today only to summarize a few of the basic requirements to be met by our cotton-finishing men and machines as they have become apparent from our own experience.

DISCUSSION

Each member of the finishing plant team: the bleacher, the dyer, the finisher, the chemist, the plant management, faces a wider and more demanding set of requirements than ever before.

The first of these requirements is so obvious that it can easily be forgotten in the pressure of our regular production work. It is simply that *a*

During the last decade we have witnessed the introduction, development, and tremendous growth of many new man-made fibers. Fabrics made of cotton blended with many of these fibers have gained widespread acceptance.

One of the earlier blends introduced was the polyamide-cotton for fabrics of improved abrasion resistance and strength. Cotton finishing plants handle these goods with relatively minor process changes.

More recently, cotton-acrylic fabrics have been processed, and can be expected to grow in volume.

Since introduction, the polyester-cotton blends have enjoyed a phenomenal sales growth. Fabrics in this group are today a major item, accounting for millions of yards of production annually.

The processing of these fabrics is both an opportunity and a demanding challenge to our cotton-finishing plants.

An obvious basic requirement of this work is that a good job be done on the cotton fiber under those conditions which do not harm the man-made fiber portion of the blend. This demands wide-range familiarity with the cotton finishing art.

It is also necessary to meet the finishing needs of the man-made fiber. In this area many new skills and techniques must be learned, some machinery modified, or new machinery installed.

There is then the need to study, to adjust, to modify processes and machinery for optimum results with each individual blend. This must go on continuously, since improvements in colors, chemicals and processes are constantly being made.

The increasing volume of well-dyed, properly finished, blended fabrics emerging from our plants is evidence that cotton finishing plant men and machines are measuring up to the challenge of the man-made fibers.

*Presented October 6, 1960 by Fred Fortess at the 1960 AATCC Convention held at the Sheraton Hotel, Philadelphia, Pa

good finishing job must be done on the cotton fiber portion of the blend or mix under those conditions which do no harm to the man-made fiber. This calls for a wide-ranging familiarity with the arts of singeing scouring, bleaching, mercerizing, dyeing and finishing of cotton.

Secondly, this processing work taxes men's ability to adapt both themselves and their processes to the demands of the man-made portion of the blend. It is in this area that new skills and techniques are needed, for the synthetic fiber must be wedded to the more familiar cotton processing to achieve optimum results.

Thirdly, continuing willingness to experiment, to study, and to improve are demanded to meet the changing needs of our customers and to utilize the continual improvements in chemicals, colors, and techniques as they are developed. A studious interest in each man-made fiber is of great value. There are considerable differences in the processing response of these new fibers even within the same chemical family. As an example, the differences between the various polyester fibers is of decided significance to the dyer. Among the acrylic-type fibers, even more striking differences exist from a processing viewpoint.

What is the effect of this on the individual member of the cotton-finishing plant team?

To the bleacher, the changes are pronounced. He quickly learns that the type sizing materials in the greige fabric is of great importance to him. Singeing is done under much more rigidly controlled conditions, and quite frequently after the blended fabric has received other processing rather than as the traditional threshold treatment. The blends which can be run through continuous alkaline scouring and hot peroxide bleaching ranges are the exception rather than the rule. He finds himself seriously considering cold peroxide, alkaline hypochlorite, or perhaps acidic chlorine or chlorite bleaching systems, depending upon the man-made fiber blended. Avoidance of heat-setting rope wrinkles in the fabric causes changes in physical handling in many instances.

The dyer faces even more complicated and varied requirements. He faces new-type dyestuffs in many instances. He is confronted with carriers and swelling agents. He must consider the effect of each dyeing procedure and system on the color and physical characteristics of both fibers in the blend. New dyeing equipment capable of higher temperatures and pressure, or modifications of existing equipment are usually necessary. Certainly a wider-ranging mastery of all means of dyeing cotton will be needed here along with all of the new techniques and dyeing systems to be learned.

The finisher faces the more exacting jobs of high-temperature treatment to enhance one or another characteristic of the man-made fiber. In other instances, formula changes will be dictated by limitations on the amount of heat that can be used. Specialty products designed to obtain the best job on the synthetic fiber must be evaluated and formulated into workable finishes along with these that accomplish end results on the cotton fiber.

Before this group, I need not dwell on how important the plant chemist can be to this endeavor. I need only mention that the demands on his time and skill are intensified, and the necessity of his working very closely with plant personnel is more urgent than ever.

The technical service groups of our great fiber, dyestuffs, and chemical manufacturers have many able men of wide practical experience as well as technical background. They render valuable guidance in establishing initial procedures and formulas. From this beginning, each member of the production team can make those changes which result in improved results. *As is always the case in finishing-plant work, it is the individual skill and judgment of men which determine the finishing results achieved.*

There are few of these man-made fibers that are not significantly changed as a result of heat treatment, Affinity for dye is altered in many cases as a result of heat treatments prior to dyeing. After dyeing, heat treatment frequently causes marked shade changes. Dyeing procedures utilizing heat treatment for dye fixation are of increasing importance today not only for certain of our man-made fibers, but also for cotton. With this in mind, it is predictable that our cotton-finishing machinery must meet the demand for *more precise control of heat,* not only from exactness of temperature and time, but equally importantly in *uniformity of application* along, across, and from face to back of the blended fabric being processed. The hydrophobic character of many of these new fibers increases the difficulty of achieving migration-free drying of our chemicals and dyestuffs on and within these fabrics.

To cite one example of the importance of machinery, there is the procedure for dyeing polyester fiber which involves the padding of selected disperse colors on the fabric, followed by drying and curing at high temperature for short periods of time. The recent development of fiber-reactive dyestuffs which dye cotton under similar conditions has made this Thermosol procedure doubly attractive to cotton finishing plants, since it makes possible the continuous dyeing of both cotton and polyester simultaneously on equipment which can also be readily used for other purposes, such as resin finishing or pigment dyeing.

A few plant trials of this procedure quickly reveal to many of us that we do not have true precision control of migration in our dryers nor real uniformity of heat in our curing ovens. Here we have a challenge to our plant engineers and machinery manufacturers.

There are few of us who will deny that equipment changes necessitated by those more stringent requirements are also of benefit in improving our work done with 100%-cotton fabrics.

CONCLUSION

That cotton finishing plants are successfully meeting today's challenges as presented by man-made fibers is evidenced by the steadily increasing yardages of attractive, well-dyed, properly finished cotton/man-made-fiber-blended fabrics which are now reaching the market.

AATCC LAPEL EMBLEM

YOUR membership lapel emblem is a badge of distinction. Do you wear it at Section Meetings, National Conventions, on business and social occasions?

Lapel emblems are available at $2.25 and pins at $2.50 at AATCC National Headquarters, P O Box 28, Lowell, Mass.

• ACTIVITIES OF THE LOCAL SECTIONS •

Delaware Valley

DELAWARE VALLEY SECTION met at Beck's-on-the-Boulevard, Philadelphia, Pa, on Friday, December 9, at which time the Section's 1960 Intersectional Contest second-prize-winning paper, "Concurrent Dyeing and Finishing of Cellulosic Textiles", was presented by George C Kantner, Rohm & Haas Co. E N Sarantis, E I duPont de Nemours & Co, Inc, chairman of the Section's Intersectional Contest Committee, introduced Mr Kantner.

(The full text of the paper appeared in the October 31 issue of *American Dyestuff Reporter*, pages 25-32.)

George C Kantner delivering the Delaware Valley Section's 1960 Intersectional Contest paper at December 9th meeting of the Section at Beck's-on-the-Boulevard

E N Sarantis (right), chairman of the Delaware Valley Section's 1960 Intersectional Contest Committee, presents check awarded for second-place finish to Clarence A Seibert, DV Section chairman

Delaware Valley Section officers for 1961 have been elected as follows: *Chairman* — Clarence A Seibert, Scholler Bros, Inc; *Vice Chairman*—Edward G Haack, General Dyestuff Co; *Treasurer*—Charles N Kuzma Jr, Amalgamated Chemical Corp; *Secretary*—Ernst W Empting, Verona Dyestuffs; *National Councilors*—L Kevin McChesney, Leatex Chemical Co; James E Conway, American Cyanamid Co; William H Bertolet III, Laurel Soap Mfg Co, Inc; John H Davids, Quaker Chemical Products Corp; and Virgil D Lyons, E I duPont de Nemours & Co, Inc; *Sectional Committee*—Walter W Gleadall, Textile Chemical Co; Francis A Mathers, Para-Chem Inc; Joseph J Murphy, Laurel Soap Mfg Co Inc; Fred V Traut, Globe Dye Works Co; *Chairman Emeritus*—Percival Theel, Philadelphia Textile Institute.

Committee chairman have been named as follows: *Program*—Thomas H Hart; *Dining*—Joseph J Murphy; *Publicity*—Francis A Mathers; *Membership*—James E Conway, William H Brehm II (cochairmen); *Outing*—Ange E Raimo, Walter W Gleadall (cochairmen); *Sectional Advisory Research*—Samuel H Loper Jr; *Corporate Membership* — Edward G Haack; *Bylaws*—Richard B Stehle; *Printing*—Louis Croce.

A portion of the head table. L to r: J Lord; E Diehl; J J Benischeck; E G Haack, vice chairman; C A Seibert, chairman

Several members of the Delaware Valley's 1960 Intersectional Contest Committee are shown in photo taken at December 9th meeting. L to r: G C Kantner, speaker; D R Baer; H Schneider; W Wolfgang; D Wue; E Dunlap Jr; and E P Sommer.

Some guests from Millville Mfg Co

Activities of the Local Sections———

Southeastern

APPROXIMATELY 150 members and guests attended the Dec 3 meeting of the Southeastern Section at the Atlanta Athletic Club, Atlanta, Ga. The meeting was arranged by Tom Holland, American Cyanamid Co. Presiding officer was outgoing chairman Robert B Hallowell, Coats & Clark, Inc.

A round-table discussion on the subject "Naphthols—Piece Goods and Package Dyeing" was attended by about 80 members. The discussion was led by Robert Price, Pepperell Mfg Co, and E S McNeil, Coats & Clark, Inc.

The technical session featured a presentation by Henry E Millson, American Cyanamid Co, who spoke on the subject "Microscopic Studies of Dyeing Processes Using Various Fibers and Dyes".

New officers for 1961 were introduced at the banquet as follows: *Chairman*—William B Amos, The Jefferson Mills, Inc; *Vice Chairman*—Leon Tigler, Eagle & Phenix Div; *Secretary*—Richard M Jones, Chemical Services, Inc; *Treasurer*—Richard D Seed, Lanett Bleachery & Dyeworks; *Custodian* — A Kempton Haynes, Rohm & Haas Co; *Councilors*—John C Cook, W R C Smith Publishing Co; R B Hallowell, Coats & Clark, Inc; and Joseph W Richardson, Russell Mfg Co; *Sectional Committee*—James H Cox, Auburn Univ; Howard L Edwrads, Bibb Mfg Co; Robert W Wurst, Pennsalt Chemicals Corp; James M Youngblood, Wehadkee Yarn Mills.

Committee chairmen have been appointed as follows: *Publicity*—George H Dockray, W R C Smith Publishing Co; *Student Chapter* — Richard L Stevens, E I duPont de Nemours & Co, Inc; *Scholarship*—H Gillespie Smith, American Cyanamid Co; *Standing Research*—Cecil B Ray, Pepperell Mfg Co; *Individual Membership*—Dwight L Turner, Arnold, Hoffman & Co, Inc, chairman, William Macke, Mayo Chemical Co, assistant chairman; *Corporate Membership*—Warren E Tiller, Tennessee Corp; *Outing*—Frank Cooper, Dixie Belle Mills, chairman, David Meriwether, Seydel-Woolley, assistant chairman; *Auditing* — Robert Van Tassell, Jefferson Mills.

SOUTHEASTERN SECTION OFFICERS FOR 1961—Seated, l to r: A Kempton Haynes, Rohm & Haas Co, custodian; Leon Tigler, Eagle & Phenix Finishing Plant, treasurer; William B Amos, The Jefferson Mills, chairman; Richard M Jones, Chemical Services, Inc, secretary; John C Cook, W R Smith Publishing Co, Councilor. Standing, l to r: Howard L Edwards, Bibb Mfg Co, sectional committeeman; James M Youngblood, Wehadkee Yarn Mills, sectional committeeman; Robert B Hallowell, Coats & Clark, Inc, Councilor; Robert W Wurst, Pennsalt Chemicals Corp, sectional committeeman.

Henry E Millson, American Cyanamid Co, guest speaker.

Robert W Price, Pepperell Mfg Co, moderator of round-table discussion on piece dyeing with naphthols.

E S McNeil, Coats & Clark, Inc, moderator of round-table discussion on package dyeing with naphthols.

Northern New England

ECONOMICS, tariffs, inventories, politics, and the national economy as they relate to the textile industry was the broad range of subject matter covered in a talk by William I Kent, president, Kent Manufacturing Co, Clifton, Heights, Pa, at the Annual Meeting of the Northern New England Section held at the Colonial Country Club, Lynnfield, Mass, on December 9, 1960. Mr Kent is former president of the National Association of Wool Manufacturers and currently a member of the Executive Committee NAWM. He is a member of the Textile Advisory Committee that re-

ports directly to the Secretary of Commerce as set forth in the Pastore Committee report of the textile industry. His subject, "Present Day Economic Outlook in Textiles" was presented in an informal manner and was interspersed with personal observations and analysis as a result of his extensive background.

The following were elected to sectional offices for 1961:

Chairman—Edward J McNamara Jr, Hamilton Chemical Corp

Vice Chairman—Frank J Rizzo, Quartermaster Research & Development Command

Treasurer—William W Pennock, E I duPont de Nemours & Co, Inc

Secretary—Joseph S Panto, Fabric Research Laboratories, Inc

National Councilors—John J O'Neil Jr, Soluol Chemical Co, Inc; Robert D Robinson, Bachmann Uxbridge Co; Donald H Thomas, National Aniline Div

Sectional Committee — Daniel Frishman, Malden Spinning & Dyeing Co; Bennett S Gesmer, Dyecraftsmen, Inc; Harold Stenlund, The Felters Co; John J McDonald, Lowell Technological Institute.

A closing feature of the meeting was a showing of a color film describing the Jug End Barn, South Egremont, Mass, site of the New England Regional Meeting slated for May 5 and 6.

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South Central

SOUTH CENTRAL SECTION held its Winter Meeting at the Hotel Patten, Chattanooga, Tenn, on Dec 9 with James A Burkart, Burkart-Schier Chemical Co, in charge.

Approximately 100 persons were attracted to the meeting which featured three concurrent open-forum technical sessions on dyeing, bleaching, and finishing; a social hour handled by R H Krause, Solvay Process Co; and a banquet session, at which R E Hamilton, executive vice president of the Tufted Textile Manufacturers Association, presented some facts on the scope and volume of the tufted operation in the Dalton, Ga, area.

The technical sessions were divided into the following groups: 1) Cotton (hosiery, knit, etc) with William Agnew, Dixie Mercerizing Co, moderating; 2) Nylon (hosiery, tricot, etc) with Everett Burgner, Davenport Hosiery Mills, moderating; and 3) Rugs and Carpeting, with Ralph Madaris, Rogers Dye & Finishing Co, moderating.

The following officers were named for 1961: *Chairman*—R J Tyrrell, Peerless Textiles, Burlington Industries; *Vice Chairman*—Lowell Shive, Arnold Hoffman Co, Inc; *Secretary*—Jack Welborn, Riegel Textile Corp; *Treasurer*—Arthur Williams, E I duPont de Nemours & Co, Inc; *Councilors*—John Sweitzer, Scholler Bros, and Joe Mosheim, Crystal Springs Bleachery; *Sectional Committee*—Harvey DeLay, Standard Coosa Thatcher; Harry Rowden, General Dyestuff Co; William Martin, Koppers Co; and James E Turner Jr, Dixie Mercerizing Co.

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Rhode Island

JOHN J ROARKE, Bradford Dyeing Association, was elected chairman of the Rhode Island Section at its Annual Meeting held at the Sheraton-Biltmore Hotel, Providence, RI, last month. He succeeds Robert H Phillips, Cranston Print Works Co, who has served as chairman the past two years.

Other officers elected to serve for two-year terms are as follows: *Vice Chairman*—Charles A Robinson, Arnold, Hoffman & Co, Inc; *Secretary*—Richard V Dugdale, Rohm & Haas Co; *Treasurer*—Harold B Sturtevant, Rhode Island School of Design.

Kenneth J Broden, The Sherwin-Williams Co, is a newly elected National Councilor from the Section. He will join Edward W Lawrence, Cranston Print Works Co, Arthur F McLean, Sayles Finishing Plants, and Raymond B Taylorson, Verona Dyestuffs, all of whom were reelected, in making up the Rhode Island Section delegation to the Council.

Elected Sectional Committeemen for 1961 were: Edward N Alexander, Crown Chemical Co; James J Dillon, Owens-Corning Fiberglas Corp; Alden D Nute, American Cyanamid Co; and James J Price Jr, Interchemical Corp.

The following committee chairmen were named: *Individual Membership*—Francis H Casey, Sandoz, Inc; *Corporate Membership* — Raymond B Taylorson; *Program*—Charles A Robinson; *Intersectional Contest Paper*—Warren N Parsons, Sayles Finishing Plants; *Dining*—James G Falcon, A Harrison & Co; *Outing*—Everett W Counsell, Interchemical Corp; and *Publicity*—Kenneth J Broden.

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Metropolitan

NEWLY elected officers of the Metropolitan Section for 1961 are as follows: *Chairman*—P J Fynn, J C Penney Co; *Vice Chairman*—Richard P Monsaert Jr, American Felt Co; *Secretary*—G A Jonic, American Cyanamid Co; *Treasurer*—E J Grady, Nopco Chemical Co; *Councilors*—Arthur R Wachter, American Viscose Corp, one year; Emil C Hansen, two years; Charles R Trommer, Boris Kroll Labs, three years; John A Komninos, three years; *Sectional Committee*—P J Wood, Royce Chemical Co; C H Brubaker, Standard Bleachery & Printing Co; Harry Moore, Burlington Mills; A E Johnson, National Institute of Drycleaning.

The three newly elected Councilors join holdovers Richard E Miller, Eastman Chemical Products, Inc, William Holst, National Aniline Div, and George Wham, Phillips-Van Heusen Corp, in making up the Section's seven-man delegation to the Council.

Committee chairmen have been named as follows: *Technical Program*—E L Stearns, American Cyanamid Co; *Membership*—Richard E Kimble, Kimtex Service Labs; *Corporate Membership*—J P Redston, E F Drew & Co, Inc; *Registration*—William F Ferrazano, National Aniline Div; *Publicity* — Charles A Whitehead, American Dyestuff Reporter; *Research Advisory* — Charles H A Schmitt, Sandoz, Inc; *Archives*—Carl Brubaker, Standard Bleachery & Printing Co; *Entertainment*—Edward G Bobilan, Sandoz, Inc; *Reception*—Max Winkler, American Cyanamid Co.

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Committee Named for New England Regional Meeting

ROBERT D ROBINSON, Bachmann Uxbridge Co, has been named chairman of the two-day New England Regional Meeting to be held May 5 and 6 at the Jug End Barn, South Egremont, Mass, in the Berkshires, near Great Barrington.

The meeting, sponsored by the three Sections of the Region, is a new departure. It will be designed for millmen who cannot easily get away, for example, to a national convention. Wives will be welcome.

All three Sections, which will provide detailed announcements in their own mailings, are represented on the committee of six for the meeting. In addition to Mr Robinson, its immediate past chairman, the Northern New England Section is represented by its

present chairman, Edward J MacNamara Jr, Hamilton Chemical Corp, who will handle the entertainment and dining. The Rhode Island Section is represented by Robert H Phillips, Cranston Print Works Co, its immediate past chairman, who will serve as vice chairman of the meeting, and John J Roarke, Bradford Dyeing Assoc, its present chairman, who will handle the technical program. Western New England is represented by its chairman, Albert H Rant, Laurel Soap Mfg Co, Inc, who will handle registration and reception, and its vice chairman, Timothy J Horan, Princeton Mills, who will handle publicity.

An illustrated folder, discussing the attractions of the Jug Barn Inn and directions on how to reach it by car, train and plane, is available on request from Jug End Barn, Inc, Great Barrington, Mass.

AATCC Calendar

NATIONAL CONVENTIONS
Sept 27-29, 1961 (Hotel Statler, Buffalo, NY); 1962 (Atlanta Biltmore Hotel, Atlanta, Ga); 1963—Boston; 1964—New York; 1965 (Conrad Hilton Hotel, Chicago, Ill)

DELAWARE VALLEY SECTION
Mar 3 (Beck's on the Boulevard, Philadelphia, Pa); Apr 14 (Ladies Night—Cherry Hill Inn, Haddonfield, NJ); May 19 (Outing—North Hills CC, North Hills, Pa); Sept 15 (Wilmington, Del); Oct 27 (Beck's); Dec 1 (Beck's)

HUDSON-MOHAWK SECTION
Mar 10 (Johnstown, NY—paper on "Wash-and-Wear" Fabrics); Apr 14 (Waterford, NY—plant tour of General Electric Co's Silicone Div); May 12 (Ladies Night); June 23 (Outing—Antlers Club, Amsterdam, NY)

METROPOLITAN SECTION
Feb 17 (Hotel New Yorker, New York, NY—"New Developments in Dye Assistants"—R J Thomas, DuPont Co); Mar 24 (Kohler's Swiss Chalet, Rochelle Park, NJ); April 21 (Kohler's Swiss Chalet, Rochelle Park, NJ—"Importance of Bow and Skew"—Lucille Rea, Simplicity Patterns, and John Robertson, Mt Hope Machine Co); May 19—(Kohler's Swiss Chalet, Rochelle Park, NJ—Ladies Night)

MID-WEST SECTION
Feb 4 (Sherman Hotel, Chicago, Ill); April 15 (Schroeder Hotel, Milwaukee, Wis); June 24 (Annual Outing—Cerami's Island View Resort, Burlington, Wis)

NIAGARA FRONTIER SECTION
Apr 7 (Joint meeting with Ontario Section, CATCC, St Catherines, Ont); May 18 (Buffalo, NY)

NORTHERN NEW ENGLAND SECTION
May 5-6 (New England Regional) Meeting, Jug End Barn, S Egremont, Mass

PIEDMONT SECTION
April 2 (Washington Duke Hotel, Durham, NC); June 9-10, 1961 (Outing—Grove Park Inn, Asheville, NC); Sept 23, 1961 (Hotel Charlotte, Charlotte, NC)

SOUTH CENTRAL SECTION
Feb 18 (Wimberly Inn); Apr 15 (Hotel Patten); June 16-17 (Summer Outing—Riverside Hotel); Sept (Hotel Patten—tentative)

WESTERN NEW ENGLAND
Mar 17 (Shelton, Conn); May 5-6 (New England Regional Meeting, Jug End Barn, S Egremont, Mass); May 19 (Ladies Night—Rapp's Paradise Inn); June 9 (Annual Outing); Sept 15 (Plant visitation); Oct 27 (Annual Meeting); Dec 1 (Shelton, Conn)

Future Papers

THE following papers have been submitted for publication in future issues of the Proceedings:

"Construction Limits of Fabrics Containing Creslan Acrylic Fiber"—H C Haller, American Cyanamid Co

"Science and Craft in Color"—Panel

"The Dyeing of Acrilan 16 and Acrilan 16/Acrilan 1656 Blends"—Walter Stump, The Chemstrand Corp

"Modern Continuous Dyeing Processes"—Richard Kern, Sandoz Ltd

"Rovana—Versatile New Yarn"—Charles R Sheehan, Dow Chemical

"Reducing the Felting Shrinkage of Wool"—Fred H Steiger, Rohm & Haas Co

"The Importance of Odor Control in Textile Processing"—Breckenridge K Tremaine, Rhodia, Inc

"Fabric Development from a Practical Dyer's Standpoint"—James Greer, Greensboro Finishing Co, Burlington Industries

"A Study in Union Dyeing"—Northern New England Section

"Selection of Direct Dyestuffs for Application to Undesulfured Rayon Staple"—Southeastern Section

"Dyeing with Vinyl-Sulfone Reactive Dyes—H Luttringhaus, Carbic-Hoechst Corp

"Status of Nonwoven Fabrics in the Textile Trade"—Howard W Shearer, American Viscose Corp

"New Fibers from DuPont"—Milton M Christie, E I du Pont de Nemours & Co, Inc

"Recent Developments in the Dyeing of Verel Modacrylic Fiber"—R J Fortune, Tennnessee Eastman Co

"New Color-Measuring Instruments for Use by the Textile Industry"—F J Rizzo and A O Ramsley, Quartermaster Research and Engineering Command, U S Army

"The Application Principles of Acrylic Backcoating"—Charles E Hoey, Rohm and Haas Co

"Dyeing Zefran Acrylic Fiber in Blends"—F M Rawicz, Dow Chemical Co

"American Standard Performance Requirements for Textile Fabrics"—Ephraim Freedman, Macy's Bureau of Standards

Elected to Membership

January 12, 1961

No designation after name indicates Senior
(A) indicates Associate
(J) indicates Junior
(S) indicates Student
* indicates transfer from another class of membership.

NEW ENGLAND REGION

Rhode Island Section

Donald V Maier

CENTRAL ATLANTIC REGION

Delaware Valley Section

Philip J Corrozi
John P Deck

Hudson-Mohawk Section

James G Bennett Jr (A)

Metropolitan Section

Edwin C Missbach
Charles F Sturm
Dominick A Martucci (S)
*Gordon K Carlson**
*Walter H Foster Jr**
*Carl J Rahm**

SOUTHERN REGION

Piedmont Section

Robert S Boothe
Van W Dillon
Geoffrey D Roberts
Gabor J Szilagyi
Robert A Boulware (J)
*Harold B Hatfield Jr**
*Robert N Josey**
*Robert S Merkel**
*Walter T Rutledge Jr**

Southeastern Section

Cecil H McDaniel
Newton T Beck (A)
*Bobby L Harrell **

WESTERN REGION

Mid-West Section

*Richard J Klemer**

Pacific Southwest Section

William E James Jr

STUDENT CHAPTERS

Auburn University

Joe W Richardson Jr (S)

Bradford Durfee College of Technology

Dennis M Sabourin (S)

North Carolina State College

Berny Bing Lee (S)

NOT AFFILIATED WITH A SECTION

William O Goulden (A)
*Abdul R Adamjee**
*Kyutae Rhee**

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ALIZARINE BLUE AR*

(C.I. ACID BLUE 41)

This is a new addition to our expanding line of level dyeing acid colors.

Alizarine Blue AR is an acid dyestuff distinguished by its excellent level dyeing properties, good solubility and good fastness to light.

Alizarine Blue AR is well suited for use as a self-shade or for mode shades in combination with other level dyeing acid colors. It is suitable for dyeing all classes of woolen and worsted fabrics, carpet yarns, felt hats, etc.

Due to its excellent leveling properties it is a very good shading color, and may be used with acid metallized colors for brightening.

PROPERTIES

LIGHT FASTNESS:	
Pastel Shades	5
Medium Shades	6
Heavy Shades	7
MILLING	5
WATER SPOTTING	5
SEA WATER	5
WASHING	5
PERSPIRATION:	
Acid	3-4
Alkaline	3
CARBONIZING	4
DECATIZING	4
BLEACHING	2
HOT PRESSING:	
Dry	4
Wet	5
CROCKING:	
Dry	5
Wet	5
DISCHARGEABILITY	2
LEVEL DYEING	Excellent

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ADR News Report:

General News of the Industry
Personalities in the News
New Products, Developments, Processes

Canadian Textile Conference

A wide variety of events, ranging from a panel of international experts discussing the future of Canadian manufacturing to a judging of a "Miss Canadian Textiles" contest, are contained in program details for next month's Canadian Textile Conference.

The Conference, scheduled for the Queen Elizabeth Hotel, Montreal, February 7-8-9, will see some 1,500 representatives of the Canadian textile industry gather for the event. Delegates and guests will hear addresses by educationists and top business figures, and will receive the opportunity to discuss world advances in industrial management, textile marketing and technology.

Under the theme "Style—Quality—Progress", the aim of the Conference is to demonstrate to the Canadian people, their governments, and to industries allied to textiles, the size, scope and economic vitality of this Canadian industry —the second largest employer of manufacturing labor in the country.

Public interest will be centered on a series of fashion shows staged during the event, and featuring high-fashion garments from Canadian couturiers.

The February Conference is the follow-up to a similar event held in Montreal in 1958. This gathering marked the first time that all sections of the Canadian textile industry had gathered for a meeting under one roof, and final total attendance was more than 1,400 persons.

General chairman of the Conference is G H Dobbie, president, Dobbie Industries Ltd, Galt, Ont; executive chairman is S J Hungerford, Du Pont of Canada Ltd, Montreal; honorary treasurer is G B Gordon, president, Dominion Textile Co Ltd; while secretary is W M Berry, Primary Textiles Institute.

●

Panel Talks to Mark AATT Meeting

The program for the annual meeting of the American Association for Textile Technology, which will be held at the Hotel Commodore, New York, NY, on Feb 8, has been announced by General Chairman Albert E Johnson, National Institute of Drycleaning.

The morning and afternoon sessions will each consist of two one-hour panel discussions with a separate keynote speaker laying the ground for each of the panels.

The meeting is open to all members of the textile industry and related fields. Registration cost including luncheon will be $15.00.

J M Cheatham, president of Dundee Mills, and current president of the American Cotton Manufacturers Institute will serve as the luncheon speaker. William E Clark, vice president & general manager of the Textile Div, U S Rubber Co, and chairman of the board, Textile Research Institute, will serve as summary speaker.

Speakers and moderators for each of the four panels will be as follows:

Retailing and Consumer Related Problems—P J Fynn, director of laboratories, J C Penney Co, speaker; Ephraim Freedman, Macy's Bureau of Standards, moderator.

End-Product Manufacturer—William Doniger, president, McGregor-Doniger, Inc, speaker; George Wham, Phillips-Van Heusen Corp, moderator.

Converting—Abbott Copeland, vice president, United Merchants & Manufacturers, Inc, speaker; Arthur Spiro, vice president, Waumbec Mills, Inc, moderator.

Mill Operations—Robert M Cushman, executive vice president, Amerotron Co, speaker; Stanley Backer, asst professor of mechanical engineering, MIT, moderator.

●

Wica Lowers Price on Dodecylbenzene Sulfonate

Wica Chemicals, Inc has announced a lower price on dodecylbenzene sulfonate (Na) 33%.

This surfactant is available only in the following bulk shipments and prices: TL at 8¢ lb and TT at 6.75¢ lb (freight allowed from fob point, Charlotte, NC, to Southeastern US).

Conferences on Permanent Finishing, Crease Resistance and Recovery Slated in Europe

Two conferences of special interest to the textile wet-processing industry have been scheduled for later this year in Europe.

The Textile Institute has arranged for an "Overseas Conference on Crease-Resistance and Crease-Recovery" to take place September 7-12 in Scheveningen, Holland.

A symposium on "Permanent Finishing 1961" will be held October 12-14 by the Schweizerischer Verein der Chemiker-Coloristen (SVCC) at the Swiss Federal Institute of Technology in Zurich. This symposium will offer twenty lectures, to be delivered by prominent American and European experts, dealing with all aspects of the field of durable finishing of cellulose and synthetic fibers. The program will embrace the following main subjects: 1) Survey, Definitions, Market Problems; 2) Science and Technology; 3) Testing and Assessing. Apart from the lectures, there will be special exhibitions, fashion shows and social events.

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Dow Reduces Butyl Acrylate Price

A reduction of $.05 per pound for normal butyl acrylate monomer has been announced by Dow Chemical Co. The new tank car and tank truck price is $.35 per pound, freight prepaid.

The lower price for butyl acrylate should stimulate research and development work with the monomer, according to Dow. Some of the areas of established use are in latexes, thermosetting resins, acrylic lacquer resins, and generally as a plasticizing comonomer to be polymerized with other vinyl monomers.

Butyl acrylate in polymers and copolymers reportedly contributes weatherability, adhesion, heat and light stability, flexibility, chemical resistance, and improved low-temperature properties.

Butyl acrylate is produced by Dow Badische Chemical Co and is marketed by Dow Chemical Co.

●

Du Pont D&C Division to Transfer NY District Office

In a move to provide improved services to customers in New York State and northern New Jersey, the Du Pont Dyes and Chemicals Division will transfer its New York district sales office, laboratory, and warehouse to a new location in Clifton, NJ, about January 31.

Du Pont has leased a building now under construction at 50 Page Road in Brighton Road Industrial Park, located one mile northeast of the intersection of the Garden State Parkway and NJ Route 3. The one-story brick building reportedly will contain 6,800 square feet of office and laboratory space and 18,000 square feet for warehousing. About 35 employees will be involved in the move.

Because of its location on main highway routes, the new combined office-laboratory-warehouse will make it possible to expedite deliveries and to provide quicker sales and technical assistance to customers in upper New York State and northern New Jersey, according to Kirk P Ferguson, New York District manager of the Division. New York City accounts will continue within close range via the Lincoln Tunnel.

An additional advantage, said Mr Ferguson, is the opportunity to make more efficient use of space by having the building constructed to meet Du Pont's special requirements. The laboratory, set up to provide technical service for the dye and textile chemical consuming industries, reportedly will be provided with the most modern equipment.

The district office and laboratory are now located at 40 Worth Street in New York and the warehousing operation at Fifth Avenue and East 27th Street in Paterson, NJ. All production is carried out at the Chambers Works, Deepwater Point, NJ, the company's largest manufacturing plant.

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for better textile processing

Textile mills get better processing, better end-results from FMC Caustic because it's low in metallic impurities that dull dyestuffs, discolor goods and cause soap-spotting.

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We're strategically located to give prompt delivery by tankcar, truck or barge . . . uniquely equipped to offer valuable technical assistance "in the mill" and at our newly organized Application Research Center at Princeton, New Jersey.

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Solitone Announces New Licensing Program

James A Wilson, vice president of sales of Solitone Laboratories, Inc, 400 Standish Rd, Teaneck, NJ, has announced a new program of licensing to permit US textile printers to produce their own oil-phase and water-phase pigment printing colors and thereby to realize substantial savings in their printing operations.

While Solitone colors have been licensed since 1955 for manufacturing in seven foreign countries, this is the first time that the plan has been offered to American printers. Mr Wilson stated that licensees under the program make no down-payments, and may withdraw from the program if it fails to meet their expectations.

Mr Wilson is president of Argyle Chemicals, Inc, 35 Water St, New York 4, NY, a distributor of pigments, flushed colors and pigment dispersions.

•

Borden Affiliate Building Formaldehyde Plant Down Under

A new quarter-million-dollar formaldehyde plant is being built in Sydney, Australia, by a Borden Chemical Company affiliate. Scheduled for completion next Spring, the plant reportedly will have initial production capacity of 13 million pounds a year.

The Australian organization, Swift and Borden Chemical Co, Pty Ltd, supplants Borden Chemical's Australian interets which were formerly known as Casco Chemicals Pty Ltd.

The new plant adjoins present production facilities of the jointly owned Australian company. About 70 percent of its formaldehyde output will be earmarked for captive use, while the balance will be made available to Australian industry.

At present, Swift and Borden Chemical Company produces thermosetting resins, chiefly of the urea, phenolic and resorcinol formaldehyde types, as well as epoxy resins and casein adhesives.

•

FRL Ballistic Range Used to Study Textile Behavior at High Speeds

A 75-mm ballistic range for studying the behavior of textile materials and structures impacted at extremely high speeds has been developed by Fabric Research Laboratories, Inc, Dedham, Mass.

It was designed and built at a cost of $79,000 for the Air Force's Non-Metallic Laboratory, Wright Air Development Division (Ohio), principally to study the impact behavior of parachute components used in missile, nose cone, and space ship recovery.

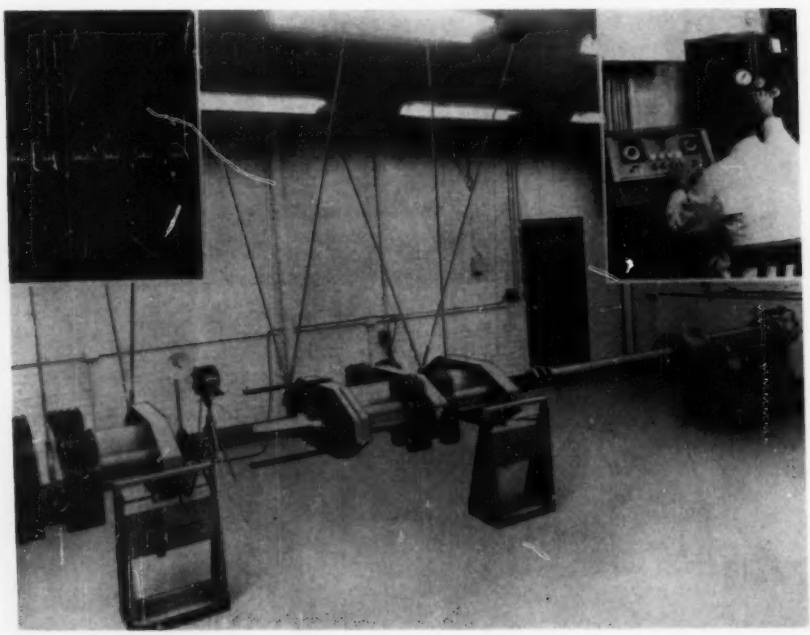
"The value of this equipment is not limited to studying materials for glamorous space applications, however," says FRL's Henry M Morgan. "Safety belts, suspension lines, crash helmets, and the arrestation nets used to restrain a jet plane landing on an aircraft carrier are typical examples of textile products that are subjected to extreme rates of loading in use and could be profitably studied on the 75 mm range. It is also adaptable to a good many plastic and even steel products."

Dr Morgan's scientific career has been concentrated on the physical behavior of materials at sonic and supersonic rates of loading and the 75-mm ballistic range is the most recent in an FRL-developed, Morgan-directed "family" of high-speed testing devices for studying materials from fibers to relatively large structures. It is particularly significant, says Dr Morgan, for two basic reasons: 1) it can test large samples having up to 10,000 pounds static strength including not only basic materials but fabricated structures as well; and 2) precise measurements are possible enabling the accurate calculation of stress-strain data. According to Dr Morgan, the latter was not the case in the multi-mile rocket sled track previously used for heavy impacting of parachute components and the sled track had the further disadvantage of extreme expense and time consumption per test.

On the new equipment, a 75-mm projectile, which can be varied in weight from four ounces to 10 pounds, is fired from a ten-foot-long, helium-activated gas gun (designed on subcontract by United Engineers, Inc of Boston) at a predetermined velocity up to 800 feet per second and with a force up to 200,000 pounds. The specimen to be studied is attached in jaws at the far end of a pendulum which is weighted up to one ton. The projectile strikes and breaks the specimen and passes on to be caught in a second and similarly weighted pendulum. The deflection of both pendulums is precisely measured as an index of projectile velocity.

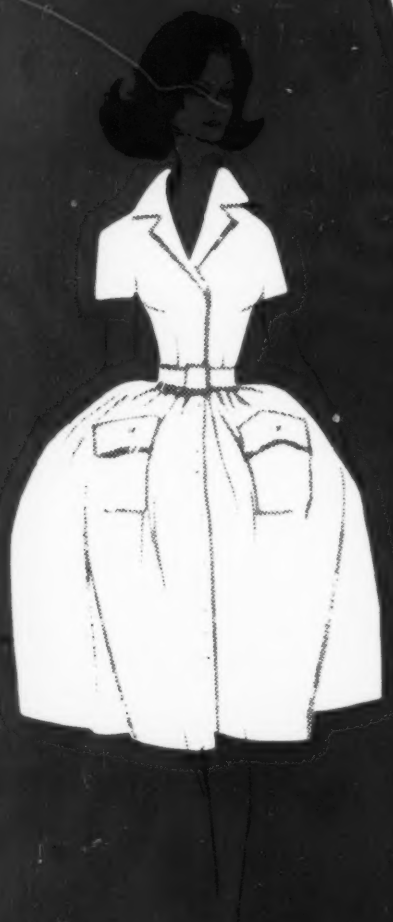
Just before impact the missile triggers (in the darkened room) a multi-microflash unit (developed by Harold Edgerton of MIT), which is capable of providing fifteen separate consecutive flashes in a total time of 1/7000th of a second with each flash having one millionth of a second duration. An open-shuttered camera records on one photographic plate up to fifteen progressive exposures of the missile striking the specimen. Measurements are then made from the photograph and these are mathematically reduced to the conventional terms of stress-strain behavior.

For safety reasons the entire firing and photographing operation is remotely controlled and accidental entrance into the firing room is prevented by electronically secured doors which can not be opened once the remote controlled "countdown" has started.



This 30-foot, 75-mm ballistic range, developed for the Air Force by Fabric Research Laboratories, Inc, Dedham, Mass, is used to study the impact behavior of extreme-strength flexible structures such as deceleration parachute components. Insert at upper right shows six consecutive one microsecond exposures of a 75-mm projectile striking a parachute shroud line at 600 feet per second. Remote control unit is shown at upper right.

COTTON FASHIONS TURN TO KARA SET 100 FOR WASH AND WEAR FINISHES!



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Poly-Acryls Producing Acrylic Resins

Poly-Acryls, a division of R A Chemical Corp, 774 East 43rd St, Brooklyn, 10, NY, has started to produce acrylic resins for textile and other applications. The new plant occupies two 40-foot-high brick buildings.

The first resin reactor went on stream in October of last year and additional resin reactors reportedly will be installed in the near future. It is estimated that present pumps, feed tanks and buried monomer storage tanks will be adequate for expansion. The process reportedly is semi-automatic and controlled so that reproducible emulsions can be manufactured.

Essentially the emulsions are made by pumping the monomer from the underground storage tanks into a feed tank where the quantity of monomer is automatically controlled. The temperature, feed rate, etc, are kept constant by pneumatically controlled instruments.

The modern laboratory has a pilot plant equipped with a five-gallon stainless-steel resin reactor in which all of the pilot runs were made. Based on this information, the large reactor was designed and installed. New resins developed by the Research and Development Department will be piloted in the five-gallon reactor prior to production.

The plant and laboratory are under the supervision of Technical Director C L Michaud. Mr Michaud has been associated with American Cyanamid Co, The Borden Co and Celanese Corp of America.

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TRI Adds Gas Chromatograph

The most recent addition to Textile Research Institute's facilities is the latest model high-temperature gas chromatograph, the F & M Model 500, featuring both linearly programmed and isothermal operation. By means of gas chromatographic analysis, the mechanisms of thermal degradation of fibrous high polymers and the natures of reactions occurring above room temperature between textile substrates and other materials will be probed.

In gas chromatography an inert gas, such as helium, functioning as carrier for the materials requiring analysis, is passed continuously through a special type of chromatographic column packed with an adsorbent. A sample, usually in the liquid or gas phase and capable of being volatilized in the operating temperature range of the column, is introduced into the carrier gas stream to be swept onto the column. The column exerts a selective retardation such that the various components of a mixture move through the column at different rates, thus achieving effective separation of the components. The measurements of a detecting device are automatically recorded to show the components as a series of peaks on a chart and, under optimum conditions, a separate peak on the chart is produced for each component present. The number of compounds present in a sample may be determined as well as the quantity of each in the mixture. Identification is accomplished by comparisons with the behavior of known compounds or the separated components may be collected as pure compounds in amounts adequate for positive identification, as they emerge from the exit port of the column. The technique is extremely sensitive, requiring only microsamples for analysis; it is capable of detecting components present in trace amounts. A single run may be completed within minutes, so that analysis time is sharply reduced. With the present apparatus, components such as hydrogen, nitrogen, oxygen, carbon monoxide, carbon dioxide, air, ammonia, aldehydes, ketones, alcohols, water, esters, acids, amines, hydrocarbons up to C_{75}, and many other compounds may be determined in complex mixtures.

This powerful and versatile technique can open up broad vistas in textile research. It would seem ideal for studying pyrolysis processes and thus can be applied to the thermal degradation of textile fibers of all types to elucidate reactions and reaction mechanisms. By the examination of the incident products, many reactions between textile substrates and various finishes or other chemical agents could be studied. Gas chromatography has been applied with some success to the separation of the hydrolysis products of methylated cellulose. In fact, the possibilities for this technique seem to be legion. At present gas chromatography at TRI is being applied to the problem of the interactions that take place at elevated temperatures between coatings and base fabrics. A general research program is also being initiated on the thermal degradative processes occurring in high polymers.

Dow Corning Opens Two New Units in Greensboro

Dow Corning Corp, Midland, Mich, officially opened its new Greensboro Laboratories and Textile Chemicals Plant on December 16. Both facilities, each occupying about 10,000 square feet, have recently been completed on the Patterson Street site of the Specialties Product Plant built in 1957.

Preceding an inspection tour of the plants, Greensboro business leaders and officials of the company were guests of W R Collings, Dow-Corning president, at the Starmount Country Club. T A Kauppi, manager of Product Engineering for Dow Corning, introduced some of the personnel recently transferred from Midland. These include William H Ragborg, manager of Greensboro Laboratories, and his laboratory supervisors, Richard Gergle, Henry J Horner, and Bill Simpson.

The Greensboro Laboratories are mainly concerned with technical service and product development in relation to the textiles, paper, and brick industries concentrated in the South and along the East Coast.

This unit embraces one laboratory for analytical testing, two for textiles and paper, and two for consumer products and brick treatment.

The activities of the new Textile Chemicals Plant include production of emulsions, warehousing, and shipping. Under Edward G Sprague these activities have been carried on for several years in other quarters in Greensboro.

•

GE Continues to Expand Silicone Facilities

General Electric's Silicone Products Department, which in the past eight months has launched construction of more than $4 million in new and improved facilities, has announced that it is building a $1 million process plant which it will devote to the production of new types of intermediate silicone chemicals.

According to Department General Manager Jerome T Coe, the new process plant will be housed in a two-story structure that will add approximately 5000 square feet of manufacturing space to the thirteen-year-old silicone plant. The facility, which is slated to go into operation in mid-1961, will be flexibly designed to carry out many reactions, including Grignard syntheses.

Other facilities under construction are a $1 million silicone fluids finishing operation, which was started last April and is going into operation this month; and a $3 million plant for the manufacture of silicone chemical intermediates, started last June.

The Waterford G-E plant is a completely integrated silicone production operation which manufactures basic chemical intermediates and silicone gums, rubbers, resins, fluids, emulsions, greases and specialties. To meet still increasing demands for silicones, its capacity has increased steadily. The current expansion is designed to boost production capacity in some product areas to 1965 demand levels.

The new $1 million process plant will be the establishment's ninth manufacturing structure and one of 17 major buildings at the site. In addition to its position as the center for G-E silicone manufacturing, the Waterford plant is also headquarters for the national sales organization of the department and for silicone research and development. Fundamental research in silicones is also carried on in the facilities of the General Electric Research Laboratory in Schenectady, NY.

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Du Pont Grants to Colleges Exceed $1,400,000

Grants totaling more than $1,400,000 have been awarded to 159 universities and colleges in the Du Pont Company's annual program of aid to education, the company announced recently.

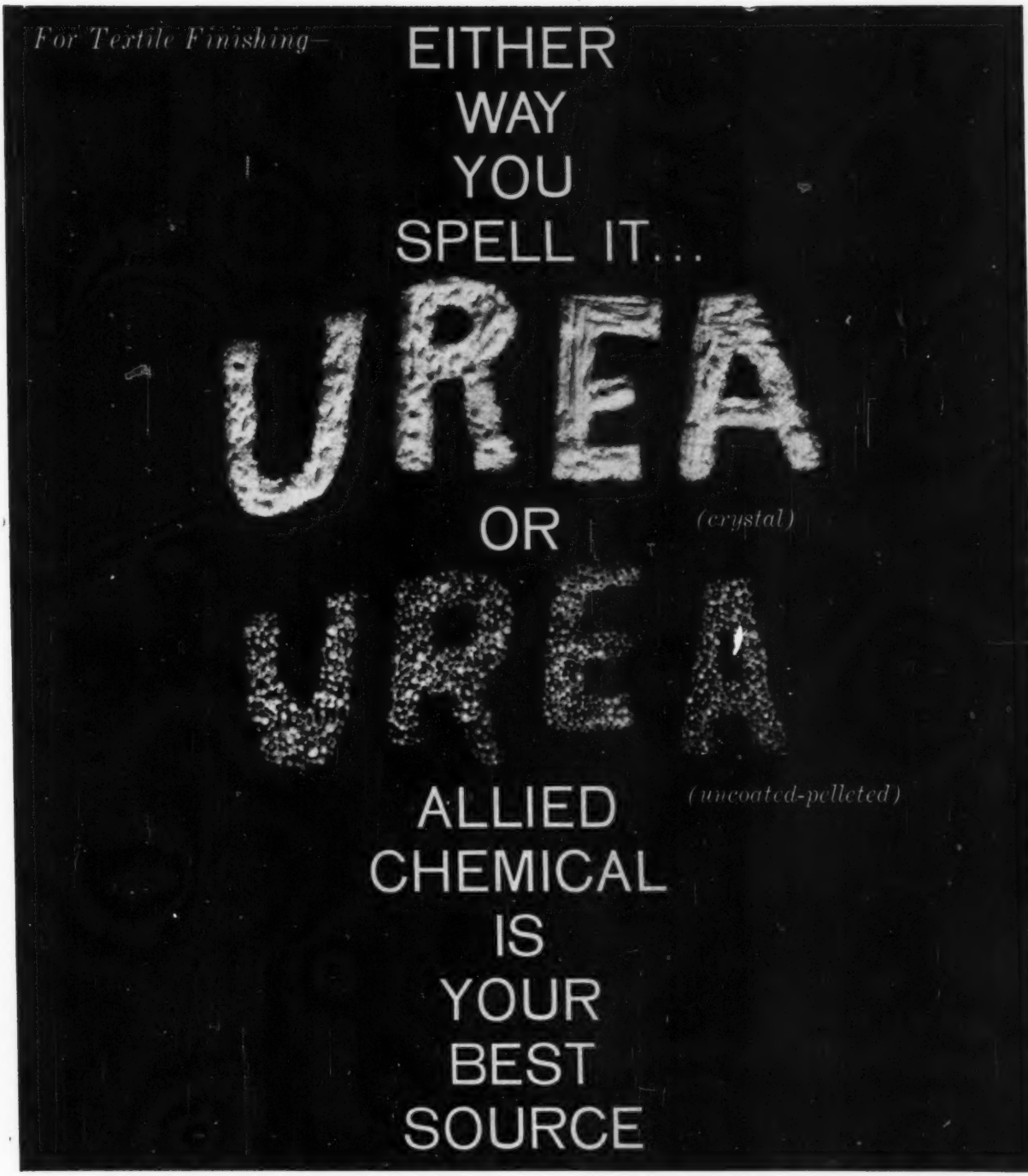
The program is for fundamental research by universities, for strengthening the teaching of science and related subjects, and for facilities for education or research in science and engineering.

•

Arapahoe Reduces Price on DPO

Arapahoe Chemicals, Inc, 2800 Pearl St, Boulder, Colo, recently announced price reductions in its diphenyloxazole (DPO, PPO).

Prices are now $5.00 for the 10-gram bottle; $18.00 for the 50-gram bottle; and $35.00 for the 100-gram bottle.



Whatever form of urea you need, you can count on Allied Chemical for fast service on a product of highest purity and uniformity.

Extremely valuable for textile applications, it's used: in acid and direct dyes for screen and roller printing; with starch and other materials for weighting, sizing and finishing; in flame-proofing compositions; and in resins to improve crush and crease resistance.

Allied Chemical Urea in uncoated, pelleted form is preferred by many textile users because of its free-flowing characteristics, and its ease of handling and storage. Both forms are supplied in the quantities to suit your special requirements.

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For specifications and local offices, see our insert in Chemical Materials Catalog, page 272A and in Chemical Week Buyers Guide, page 27.

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IFATCC Delegates Consider Expansion

A meeting of the council of Delegates of the International Federation of Associations of Textile Chemists and Colorists was held in Mulhouse in September, 1960, in response to an invitation received from the Association des Chimistes de l'Industrie Textile (ACIT), which was celebrating its 50th anniversary there from 23rd-25th September. The chair was taken by the president, John Boulton. All eight member nations of the Federation were represented by a total of 29 delegates.

After an expression of thanks to the hosts, the chairman honored the memory of the recently deceased president of the Austrian Association of Textile Chemists and Colorists, F Gasser. The minutes of the meeting held in Basle on February 26, 1960, were accepted whereupon Mr Boulton brought up the main item on the agenda, which was the expansion and further development of the Federation. He had made known his opinions on this subject in a special memorandum which was sent to the national presidents several weeks before the meeting took place.

Besides applications from Polish and Bulgarian Associations, an application for membership had been received from the American Association of Textile Chemists and Colorists. This world-wide interest in the work of the Federation shown by all these countries was warmly welcomed. In the president's view, nothing should stand in the way of completely comprehensive world-wide collaboration and the IFATCC had before it the task of initiating a world-wide organization.

At their last meeting, the delegates agreed in principle to an extension of the Federation's activities on a world-wide basis. It soon became evident, on closer examination, that the present organization of the Federation is in need of further consolidation in order to meet future requirements. It was felt that the Federation should have more to offer to overseas member organizations in particular than just a single world congress every three years.

A further point was that the associations of some countries have statutes that differ from those of the present member associations. One of the most important problems which will have to be tackled by the Federation is the question of the training and qualification of the members of the individual national associations.

A first step in this direction was the commencement of work on the setting up of a Technical Committee; but this preliminary work is progressing only very slowly owing to the many demands made on this committee's members by their professional duties.

A discussion ensued on the points raised by the president in his speech. Although the delegates were generally positive in their agreement, the difficulties which might arise were not overlooked. It would be quite conceivable to build up the Federation, which is restricted at the present moment to eight European neighbor countries into a world-wide organization or to incorporate the present Federation in a world organization covering several geographical zones. There are, therefore, a great number of points that need clarification, so it was unanimously decided to set up a working committee (subcommittee) to which each national association had to delegate one member. Apart from these eight members, the president, vice president and secretary of the Federation will also serve on this working committee. The task of this working committee is to clarify details and to submit the results of its discussions as proposals to the council of delegates.

In the evening, the delegates were invited to a dinner given by ACIT president Zuber, at which the representatives of the national associations offered their congratulation and best wishes to the ACIT on the occasion of its 50th anniversary.

●

AHEA to Hold 52nd Annual Meeting

The American Home Economics Association will hold its 52nd annual meeting in Cleveland, O, June 27 to 30.

The program will include speakers of national and international importance, experts in various areas of home economics, exhibits of the latest developments in products and services used by home economists, trips to places of professional interest, and social events to provide relaxation for the delegates.

AHEA president Dorothy Siegert Lyle will preside at the opening session. Dr Lyle is director of consumer relations for the National Institute of Drycleaning, Silver Spring, Md.

30th Annual Meeting, ISCC

The 30th Annual Meeting of the Inter-Society Color Council will be held at the Sheraton Hotel, Rochester, NY, on Monday, Tuesday and Wednesday, April 10-12.

On Monday, April 10th, meetings of the color problems subcommittees will be held.

The annual business meeting will be on Tuesday morning, April 11th. During Tuesday afternoon and Wednesday morning a symposium will be held under the general title of "Color in Photography and Television". The Banquet will be held on Tuesday evening.

For further information, write to Ralph M Evans, secretary, Inter-Society Color Council, Color Technology Division Building 65, Eastman Kodak Co, Rochester 4, NY.

●

Butterworth Marks Production of 36,000th Calender Roll

H W Butterworth & Sons Co, Bethayres, Pa, manufacturer of calender rolls, recently marked the production of its 36,000th pressed roll for the textile trade.

Butterworth roll-making experience goes back to 1885, according to Stanley Brooks, vice president of the Butterworth company, now a division of Van Norman Industries, Inc. The company combines the experience of Textile Finishing Machinery Co, Providence, RI, purchased in 1944, and three other New England firms, Granger Foundry & Machine Co, Rusden Machine Co, and Phoenix Iron Foundry.

"In calendering and embossing operations, the long life of Butterworh rolls helps to keep costs an acceptable level," Mr Brooks said. "It is not so much the extra stack life. More important is the time lost when rolls must be changed. Changing rolls can be costly in so many ways. With the Butterworh roll, there is much less frequent roll changing."

In the construction of the rolls, the cotton is first cleaned and combed. From sheets of cotton, circles or "doughnuts" are cut to fit the shaft. The "doughnuts" are slipped onto the shaft a few at a time. When a small amount of cotton has been fed onto the shaft the roll is placed vertically into a frame and tremendous pressure is applied. Hundreds of tons of pressure are used and the cotton is compressed for long periods of time, as much in some cases as 24 hours. This operation is repeated until the entire width of the roll has been filled, the total length of time taking up to 20-25 days.

It would seem that enough cotton could be applied at one time to cover the entire width of the roll with a single pressure treatment, but this is not the case. In order to insure proper hardness and density, only small amounts of cotton can be compressed at a time.

The face of the filled roll is rough and uneven after the pressure has been applied. A special grinding machine is required to "sand" the cotton to kid-glove smoothness.

Butterworth uses a series of tests to insure perfect hardness. As many as 120 readings are taken on each roll in several of the tests in the series. Other tests insure smoothness.

Butterworth uses a variety of materials to fill the rolls. Paper, felt, cotton, and corn husks find a place in raw material construction. Materials are often combined, such as cotton and sheets of corn husks. But the most common fill is cotton.

"There are so many materials that we can use in calender rolls, each of them designed to meet a specific need," said Mr Brooks, "that we maintain a file on each customer's requirements."

Butterworth is said to be particularly proud of the fact that even competitive builders of calender stacks are specifying that their stacks be equipped with Butterworth rolls.

●

Bruckner Machinery Corp Set for Test Runs

Bruckner Machinery Corp, Cedar Grove, NJ, recently announced the opening of a branch plant in Germany, which has doubled capacity and enabled it to meet delivery requirements of the U S textile market for tenter frames and drying machines.

Bruckner Machinery Corp is the US division of Trockentechnik, Kurt Brueckner KG, Leonberg, Germany.

It is reported that a complete tentering, drying and heat-setting machine, presently installed in the metropolitan New Jersey area, will be available shortly for test runs.

New Rhoplex® acrylic resins for non-stiffening, non-yellowing backing for furniture upholstery

Extremely durable backings and binders for fabrics and carpeting—plus other advantages possible only with acrylic materials—are produced by two new self-crosslinking RHOPLEX acrylic resins that cure to tough, resistant polymers under catalysis and heat. The usual vulcanizing agents, plasticizers, and anti-hardening agents are not needed with RHOPLEX HA-8 and RHOPLEX HA-12.

RHOPLEX HA-8 is a highly durable acrylic polymer which produces finishes that withstand dyeing, washing, and drycleaning. It may be used alone, or in combination with fillers, thickeners, or other RHOPLEX resins.

RHOPLEX HA-12 is similar to RHOPLEX HA-8, but produces firmer finishes with improved tensile strength, and may be used with RHOPLEX HA-8 to obtain intermediate effects.

Both products are effective binders for non-woven fabrics, adhere well to synthetic fibers, are ideal for backcoating automotive and furniture upholsteries, and are good pigment binders. They resist discoloration and stiffening with age. They do not discolor fibers since the cured polymer is water-clear.

Other RHOPLEX binding and backing materials, such as RHOPLEX HA-4 and RHOPLEX B-15 may be used to modify RHOPLEX HA-8 and RHOPLEX HA-12.

Write Dept. T-1 for technical bulletins summarizing properties and uses of Rohm & Haas RHOPLEX acrylic materials for fabric finishes, backcoatings, and binders.

ROHM & HAAS

PHILADELPHIA 5, PA.

RHOPLEX HA-8 HA-12

PERSONALITIES IN THE NEWS

Gerstacker

Carl A Gerstacker, recently made chairman of the board of directors of Dow Chemical Co, last month was unanimously elected president of the Synthetic Organic Chemical Manufacturers Association at its 39th annual meeting, held at the Roosevelt Hotel, New York. The Association represents manufacturers of 90% of the domestic production of commercially marketed synthetic organic chemicals.

Simultaneous with Dr Gerstacker's election, *Chester M Brown*, president, Allied Chemical Corp, was elected 1st vice president of the Association, and *Arthur P Kroeger*, assistant general manager, Organic Chemicals Division, Monsanto Chemical Co, was elected 2nd vice president. Elected to fill the position of treasurer of SOCMA was *Robert L Bateman*, manager, marketing services, Union Carbide Chemicals Co, Union Carbide Corp; while *Louis F Loutrel Jr*, vice president of sales, Maumee Chemical Co, and *Carl S Oldach*, assistant general manager, Organic Chemicals Department, E I duPont de Nemours & Co, Inc, were elected new members of the board of governors (Class of 1963).

Robert M Aude, president, Heyden Chemical Div, Heyden Newport Chemical Corp, will continue as a member of the board of governors (Class of 1962), while *Paul Mayfield*, vice president and member of the board, Hercules Powder Co, was appointed a new member of the board (Class of 1962) to fill the vacancy created by Mr Kroeger's resignation to become 2nd vice president.

C Kenneth Egeler, Eastern manager of the Pigment, Color and Chemical Division, The Sherwin-Williams Co, and *Thomas C Keeling Jr*, vice president and general manager of the Chemicals & Dyestuffs Division, Koppers Company, Inc, will also continue as members of the board of governors (Class of 1961).

Elvin H Killheffer and *August Merz*, past presidents of the SOCMA, were reelected honorary members of the board of governors for one-year terms.

In a departure from the usual annual election activity, the Association unanimously elected as honorary lifetime SOCMA members *Norman C Babcock*, retired vice president of marketing of Union Carbide Olefins Co, Union Carbide Corp; *Paul K Lawrence*, retired manager of trade relations, Dyes & Chemicals Division, E I duPont de Nemours & Co, Inc, and *Sidney C Moody*, retired vice president for International relations and member of the board of directors of American Cyanamid Co.

This honor was bestowed on Messrs Babcock, Lawrence and Moody for their outstanding contributions to the development of the organic chemical industry in the United States. The last honorary membership election was in 1952.

The featured speaker at the annual meeting was *Cecil H Underwood*, governor of West Virginia. Under the title, "Economic Change—A Plan for Growth", Governor Underwood discussed the increasingly important problem of revitalizing areas within the country that have not kept pace with the surge of modern economic growth.

●

The Harchem Division of Wallace & Tiernan Inc has announced the appointment of *Peter J O'Reilly* to its Product Development Department. Mr O'Reilly was formerly with Roger Williams Technical and Economic Services.

Announcement was also made that *Donald Wild*, formerly with Chemical Rubber Co, has joined Harchem's field sales staff and has been assigned to the Midwest area.

●

Kennedy

The Lynrus Finishing Company, Inc, Poughkeepsie, NY, has named *Harry G Kennedy* director of sales.

Mr Kennedy was with Metro Atlantic, Inc for the past seven years, and has been in the finishing and textile chemical industry for the past 23.

In his new position he will be in charge of all commercial sales. Lynrus Finishing specializes in a durable flame-retardant finish.

Saltzman

Neal M Draper has been appointed vice president of Allied Chemical's National Aniline Division.

In his new position, Mr Draper will be responsible for the sale of National Aniline organic chemicals, and dyestuffs and pigments.

Mr Draper joined Allied Chemical's Solvay Process Division in 1935. He has served as assistant to the president of National Aniline since July, 1957.

Max Saltzman has been appointed to the newly created post of technical assistant to the vice president.

In his new position, Mr Saltzman will be responsible for the coordination of research and development projects in connection with pigments and pigment intermediates . Mr Salzman for the past five years has been manager of special projects in charge of the Spectrophotometer and Analytical Laboratories of Harmon Colors in Haledon, NJ. He will make his headquarters in New York, where he will be available to provide technical assistance on all National Aniline activities related to color.

●

Albert M Juergens Jr has joined the Wallerstein Company, Division of Baxter Laboratories, Staten Island, NY, as assistant to the company's president, *Arthur C Emelin*.

Before joining the Wallerstein Co, Mr Juergens was associated with American Cyanamid Co.

●

Edward Szlosberg has joined the Applications Research and Service Department of The Chemstrand Corp.

Prior to joining Chemstrand, Mr Szlosberg was associated with Color Knit Dyeing Corp, Elizabeth, NJ.

●

Allen M Mulder has joined Ciba Co Inc as a sales representative in the company's midwestern district office. He will sell Ciba dyes and chemical specialties to the paper industry in the Michigan area.

Prior to joining Ciba, Mr Mulder was associated with Allied Paper Corp as a mill manager.

●

Harry B Martin has been promoted to the position of department head of the Textile Finishing and Fabric Developing Department, The Manhattan Shirt Co, replacing *Charles Sherman*, who has resigned.

Mr Martin first joined Manhattan in 1951. He has been assistant head of this department since 1957.

●

Donald M Black has been appointed to the position of manager of development and market research, Diamond Alkali Co.

Dr Black was employed previously by the Monsanto Chemical Co for thirteen years.

●

Kurt J Winter has been elected president of the American Association for Textile Technology, Inc, succeeding *Cameron A Baker*, Better Fabrics Testing Bureau.

Giles E Hopkins has been elected 1st vice president, and *John M Holland*, 2nd vice president.

Newly elected to the board of governors are: *C Eugene Coke*, *Frederick E Anderson*, and *Albert E Johnson*. Holdovers on the board are *J Fred Murray*, *Genevieve M Smith*, *Donald M Goerg*, *Arthur E Jerome*, and *Graham M Richardson*.

●

Slesinger

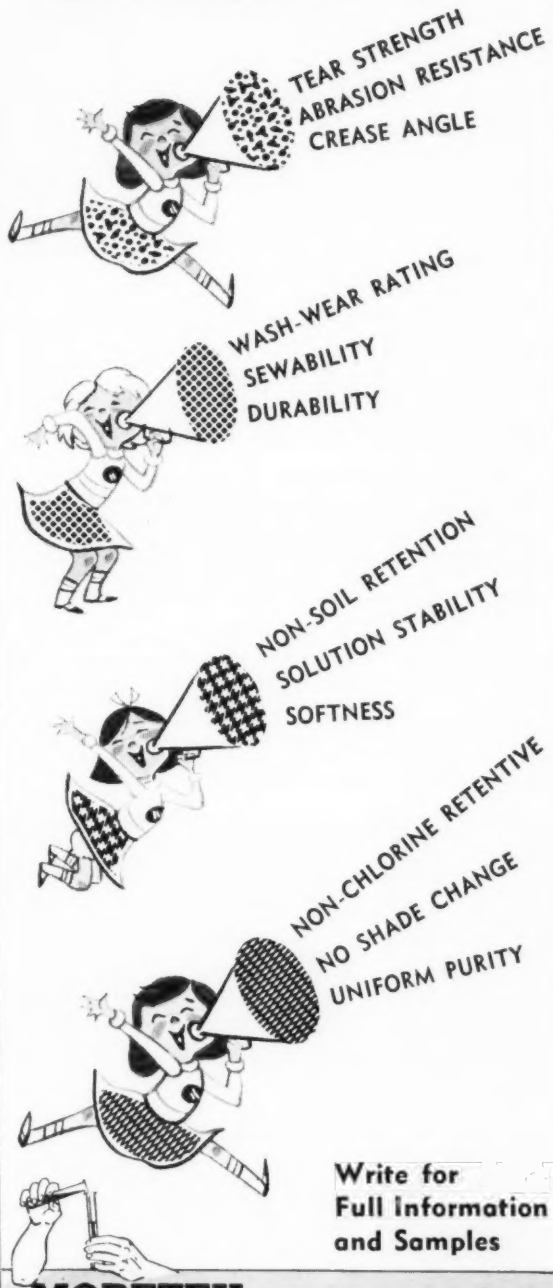
M L Slesinger, for fourteen years southern sales manager, has been elected a vice president of the Textile Chemical Division, Dexter Chemical Corp, New York.

Mr Slesinger will continue as southern sales manager of this division. Prior to joining Dexter, Mr Slesinger's experience in the textile field included positions with North American Rayon, Sun Chemical Corp, and United Merchants.

MOROPOL 700

Polyethylene Emulsion

Production Men Report Improvements in . . .



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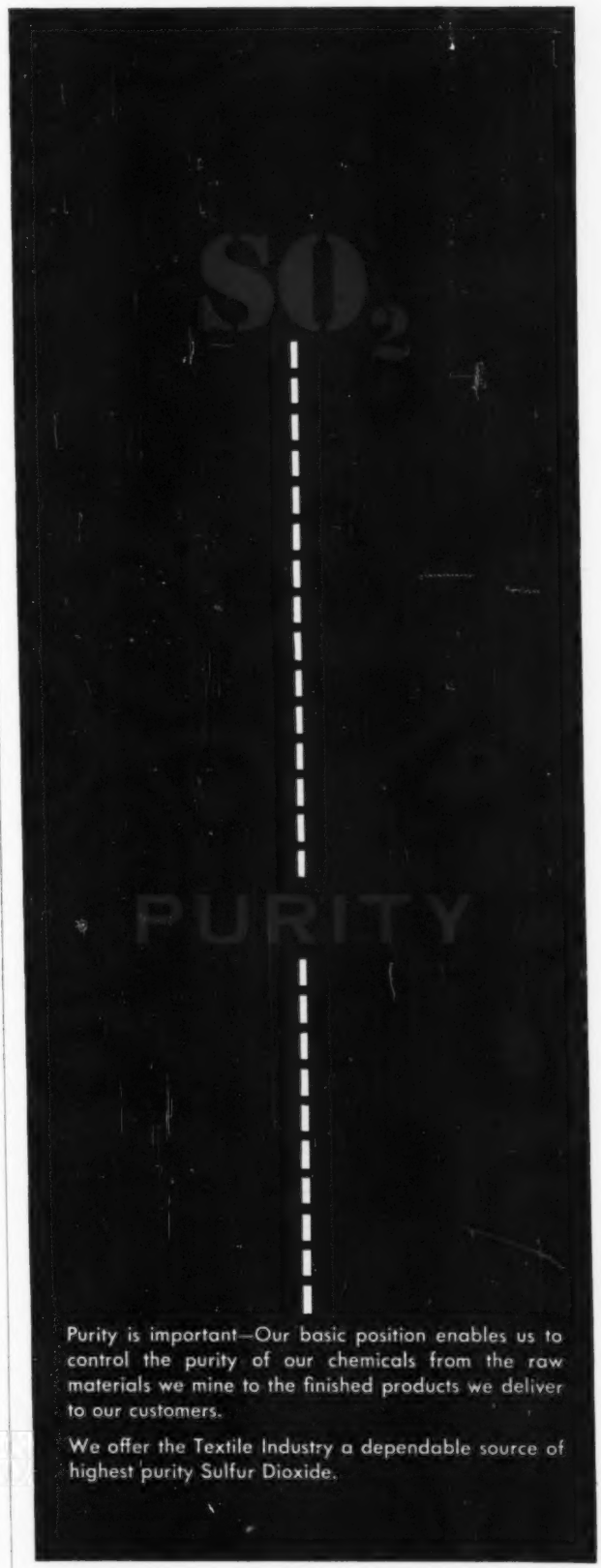

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We offer the Textile Industry a dependable source of highest purity Sulfur Dioxide.

TENNESSEE CORPORATION

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Jones

William H Jones has been appointed assistant manager of the Carbic-Hoechst Corp's Southern District office, located at 123 New Bern St, Charlotte, NC.

Prior to joining Carbic in 1947, Mr Jones was associated with the Clearwater Finishing Co.

In addition to his new duties as assistant to *E H Grayson*, Southern District manager, Mr Jones will continue to call on textile finishing plants in the Carolinas.

●

Falk

The appointment of *Craig E Falk* as manager of the Adams, Mass plant of the Dewey and Almy Chemical Division, W R Grace & Co, Cambridge, Mass, has been announced. The Adams plant manufactures Dewey and Almy's "Darex" textile printing blankets.

Mr Falk, who joined Dewey and Almy in 1954, has been assistant plant manager of Dewey and Almy's Owensboro, Ky, plant. He succeeds *Charles E Brookes*, who has been appointed assistant general manager for Dewey and Almy's impregnated fiber tape backings and shoe materials. Brookes also retains overall supervision of manufacturing at the Adams plant.

●

Trustees of Corn Industries Research Foundation, Inc, have re-elected *Frank K Greenwall* as president, and re-installed other incumbent officers for a team of one year. Mr Greenwall, who headed the Foundation during 1960, is chairman of the board of National Starch and Chemical Corp.

The Foundation trustees also re-elected *William T Brady* and *A E Staley Jr*, as vice presidents. Mr Brady is chairman of Corn Products Co. Mr Staley is chairman of A E Staley Mfg Co.

Floyd J Hosking, executive vice president and treasurer of the Foundation for the past several years, was re-elected to these posts. Mr Hosking is chief staff officer of the Foundation at its Washington headquarters.

Other staff officers to continue in their present positions are *William J Hoover*, secretary and manager of technical services; *John T Goodwin Jr*, technical director; *Robert D McMillen*, public relations manager, and *Michael F Markel*, counsel.

Corn Industries Research Foundation, Inc is an association of the eleven companies which compose the corn-refining industry in the United States.

●

W A Newell, director of textile research in the School of Textiles at North Carolina State College, has resigned his position to become manager of product planning at Whitin Machine Works. Mr Newell was appointed textile research director at the college in 1952.

Dean Campbell added that, although a replacement has not yet been selected for Newell, plans are being completed for a consolidation and eventual expansion of the school's textile research activities.

●

Leon Z Therrien has resigned his position as sales representative for Putnam Chemical Corp to join the New England sales force of Organic Chemical Corp, East Providence, RI.

Mr Therrien joined Nova Chemical Corp, predecessor of Putnam Chemical Corp, in 1933, following experience as head colorist at Queen Dyeing Co and Slater Co, and assistant superintendent at Algonquin Print Works.

●

Clifford

A T Clifford has been appointed associate director of chemical research for the Riegel Textile Corp.

Dr Clifford joined Riegel in 1949 as a chemist and became senior chemist in 1956. He will continue to make his headquarters in Ware Shoals and will report directly to *G T Gardner*, executive vice president.

A number of changes in the organizational structure of the chemicals division of Eastman Chemical Products, Inc, subsidiary of Eastman Kodak Company, have been announced.

Principal among these changes is the appointment of *Robert H Cannon Jr* to the newly created post of assistant sales manager in charge of field sales. Mr Cannon has most recently been eastern regional sales manager with headquarters in the company's distribution center at Lodi, NJ. In his new post he will be located at Kingsport, Tenn.

Cannon

George J Taylor, formerly district sales manager in charge of the division's Philadelphia office, becomes eastern regional sales manager. He will continue to make Philadelphia his headquarters.

W C Cooke will become district sales manager of the Philadelphia office. Mr Cooke has been a sales coordinator in Kingsport.

R Clay Dubberly, formerly sales representative in charge, becomes district sales manager of the division's Cleveland office. Also, *David S Oaks*, a new sales representative, has been assigned to this office.

Taylor

C R Lee will head the Buffalo sales office, and *Ted K Bailey* will serve as sales representative in the Chicago area. Mr Lee moves to Buffalo from the Chicago sales office where he has represented Eastman in the sale of its industrial and specialty chemicals for the past two years. His new assignment will include Western New York, Western Pennsylvania, and Southern Ontario areas. Mr Bailey's previous assignment was in the company's Customer Service Laboratory in Kingsport.

The general coordination of sales activities at the company's main offices in Kingsport has been reorganized with the appointment of four product managers. The four new managers are: *T P Johnston III* for industrial chemicals and cellulose esters; *R R Shelly* for all chemicals produced by Texas Eastman Co; *W R Kingdon* for organic chemicals, additives and dyes; and *B L Beard* for special Epolene marketing situations.

Other appointments include that of *Raymond B Herring* as assistant manager, Chemical Sales Development Department, and *Norman M Atkins* as assistant advertising manager.

In the area of sales service and sales development, *B N Stuckey* becomes chief chemist in charge of the sales service laboratory and *Fred M Ball* becomes chief chemist in charge of the sales development laboratory.

●

Two management appointments in the Collway Pigments Division, General Aniline & Film Corp, have been announced.

James J Gannon has been named manager, Technical Service Laboratory, and will be responsible for technical service and applications research of the Division's present pigment product lines, maintaining his headquarters at the company's Linden, NJ, plant.

Vollney Tullsen has been appointed manager, pigment research and development, with responsibility for present pigment product lines. He will also maintain his headquarters at Linden.

Mr Gannon, whose previous position was that of supervisor, Pigments Research Service Laboratory, joined the company in 1953.

Mr Tullsen, whose former title was senior chemist, organic pigments, joined the company in 1957.

●

J H Lowenstein II

Jos H Lowenstein & Sons, Inc, manufacturers of chemicals and fur dyes, has announced a new slate of officers.

Joseph H Lowenstein II, eldest grandson of the late founder and son of the new president, *Herman J Lowenstein*, will assume the vice presidency. *Salomon C Lowenstein*, former secretary, will be secretary-treasurer.

Jelinek

Knowles

Mutaffis

The appointment of three administrative executives for the recently created Research and Commercial Development Department at General Aniline & Film Corp has been announced. These executives will direct the activities in the major areas of the Research and Commercial Development Department.

Charles F Jelinek was appointed manager of the Group's Central Research Laboratory at Easton, Pa, where he will be responsible for new fields research programs and technical service activities carried on at that location. He was previously manager of new fields research at the Laboratory.

Cecil M Knowles has been appointed manager of commercial development, responsible for market research, market development and related business services and will remain at the company's offices at 435 Hudson St, New York. He was previously manager of market development for GAF's Dyestuff and Chemical Division.

Thomas D Mutaffis has been appointed manager of research engineering and will direct engineering research, process studies and pilot-plant operations relating to new fields research programs. He will maintain his headquarters at the company's Linden, NJ, plant for the time being. He was previously manager of the Chemical Engineering Section.

●

S J Spitz Jr has been appointed president of the Newport Industries Division of Heyden Newport Chemical Corp. Mr Spitz succeeds *E F Sisson*, who resigned January 1 after 32 years with Newport. Mr Sisson will remain a member of the Corportaion's board of directors and serve, also, as special assistant to *S Askin*, the Corporation's president.

Mr Spitz has been executive vice president since early 1960. He has been with Newport Industries since 1946.

Named to the executive vice presidency vacated by Mr Spitz is *Harold E Rose*, who has been vice president in charge of production for Newport Industries.

Mr Rose, who joined Newport in 1940, has been manager of the division's Oakdale, Fla, plant and has supervised operations at the company's other producing facilities as assistant vice president of the division.

●

Schwarzler

Ehrisman

Tivy

The Foxboro Company, Foxboro, Mass, has added a marketing division which will serve its associated companies in England, Canada, Holland and Japan, as well as its US market.

Appointed vice president of marketing was *C Schwarzler*. He will also direct the company's sales promotion and publication activities. Mr Schwarzler has been manager of international operations since 1955.

Sales growth in the domestic market has been reflected by the appointment of *H O Ehrisman* as vice president and U S general sales manager. He has served as general sales manager since 1955.

V V Tivy has assumed a new position as director of engineering.

●

Althouse Chemical Co has announced the addition of two new members to its staff.

Robert Eltonhead has joined the Company as a member of the research staff. Mr Eltonhead has had more than 20 years of experience in the field of organic chemistry.

Norman Price has been appointed to the sales staff and will cover the Tennessee area. Mr Price joins Althouse with 20 years experience in the field of dyestuff applications to textiles.

●

National Starch and Chemical Corp has announced the promotion of *Joseph A Fertig* to the position of supervisor in the Resin Research Group at the Alexander Research and Development Laboratories at Plainfield, NJ. Dr Fertig has been an important contributor to National's success in developing synthetic polymer systems.

Leo Kruger has been promoted to senior research chemist in the Starch Research Group. He will continue to make his headquarters at Plainfield.

Walter G Kunze and *R B Evans*, both associated with the Research and Development Group, have been promoted to new positions—Dr Kunze to process development associate, and Mr Evans to scientist. They will continue to make their headquarters at NSCC's Baltimore, Md, plant.

●

Ratcliffe

Kopp

Ault

Davies

Johnson

Bartle

Putnam Chemical Corp, Beacon, NY, has announced the appointment of *W J Ratcliffe* as sales manager for the New England territory, and *Richard Kopp* as technical sales representative concentrating particularly in the field of package dyeing.

Mr Ratcliffe, who will be headquartered at Beacon, was formerly superintendent of dyeing at Burlington Industries' Dublin, Va, plant.

Previous to joining Putnam, Mr Kopp was superintendent of dyeing with Thies Dyeing Mills, West Warwick, RI.

Bromwell Ault has been elected vice chairman of the board of Interchemical Corp and *William N Davies* and *Kenneth B Lane* have been elected vice presidents.

Mr Ault, a member of the board of Interchemical since its formation, has held a series of executive posts. Since 1944, he has been a vice president of Interchemical.

Mr Davies, who will be vice president —sales, has been general manager of Interchemical's Color & Chemicals Division since 1958. In this newly created post, Mr Davies will specialize on the sales activities and diversification planning of the Corporation as a whole.

C Stanley Johnson succeeds Mr Davies as general manager of the Color & Chemicals Division. He was formerly vice president of Interchemical's Printing Ink Division.

William E Bartle, formerly production manager of the Organic Syntheses Department of Interchemical Corp's Color & Chemicals Div, has been appointed technical representative in the Southern sales district.

F Lee Terhune has been named West Coast representative for the Chemicals & Plastics Division of Food Machinery and Chemical Corp. Mr Terhune will handle sales of plasticizers, organic intermediates, phosphorus chemicals, and other organic chemicals from the division's office at 2121 Yates Ave, Los Angeles 22, Calif.

Charles F Ferraro has been promoted to the position of supervisor of the polymer evaluation section of the organic and polymer department at FMC's Research and Development Center at Princeton, NJ.

Dr Ferraro will be responsible for all work at the Center pertaining to the measurement of physical properties of polymers and plastic materials.

●

James MacLaren has retired from Nyanza Color & Chemical Co after 50 years as a salesman and technician in New York, Ohio and Vermont.

Mr MacLaren started with the Berlin Aniline Works in 1908. After World War I, Berlin Aniline Works was sold by the Government to Franklin Aniline Chemical Co, and then to Nyanza, which Mr MacLaren represented up to October 31, 1960.

Mr MacLaren wishes to thank all his friends that he has worked with during his career for their kindness to him.

●

The Wallerstein Company's 25-year Service Club recently held its annual banquet at the Tavern on the Green, Staten Island, NY.

Five new members were welcomed. They were *Thomas L McNally, George F Piper, Hans Schleich, June Silverman,* and *Henry Sturm.*

Arthur C Emelin, president of Wallerstein, spoke briefly. He congratulated the new members as he presented gold watches to each of them.

Current membership in the 25-year Service Club is 81. Fifty-three members are still working with the company, 28 have retired.

●

Erwin Klingsberg has been appointed research associate at the American Cyanamid Co's research center in Bound Brook, NJ.

Dr Klingsberg has made many contributions to Cyanamid's scientific progress since 1946, when he joined the staff of the Bound Brook laboratories.

●

P V Harper has joined Jefferson Chemical Co's Austin Laboratories as technical service representative in the Field Services Section.

Prior to his recent appointment with Jefferson Chemical, he was employed with Shell Chemical Co as a research chemist.

JOHN M HOOD, senior chemist, Erwin Mills, Research and Development Laboratories, Cooleemee, NC, and a charter member of the American Association of Textile Chemists and Colorists, died in Wayne, Pa, of a heart attack on December 23, 1960. He was 68 years old.

Mr Hood was a graduate of the Massachusetts Institute of Technology in the class of 1916. Following graduation, he became an instructor of chemistry at MIT for two years and then joined Pacific Mills Print Works, Lawrence, Mass. He served in the Gas Defense Branch of the U S Army Chemical Warfare Service in World War I after which he returned to Pacific Mills where he remained until 1927.

During his career, Mr Hood was associated with United States Finishing Co and American Cyanamid Co. In 1953, he joined Erwin Mills.

Mr Hood was one of a small group of men in the textile industry which formed AATCC in 1921.

●

RUSSELL CHARLES SMITH, 71, a charter member of AATCC, and a vice president and a director of the Cranston Print Works, where he had been general manager until his retirement from that post in 1957, died Dec 11 at his home in Cranston, RI, after a long illness.

Mr Smith held several positions of importance in the business community.

He was educated at Moses Brown School, Brown University, where he was graduated in 1910, and L'Ecole de Chemie at Mulhouse in Alsace. He started to work at the Cranston Print Works in 1927 as assistant to Harry S Duckworth, then the manager. He became general manager in 1931 and later was made vice president and a director.

Under his direction, Cranston Print Works grew from a single-plant operation to become the largest independent job printer and finisher of fine cloth in this country. While Mr Smith was general manager, Cranston Print Works acquired plants in Webster, Mass, and Fletcher, NC. Mr Smith had supervisory control of all three plant and divided his time among them.

●

MARK L DAVIS of New York Mills, NY, a member of AATCC since the early 1920's, died October 3, 1960, after an illness of about three months.

He had been a textile chemist for about forty years, starting at the Pacific Print Works at Lawrence, Mass; briefly with the Renfrew Mfg Co in Adams, Mass; and with General Dyestuff Co in the Providence Branch; then for twenty-seven years with A D Juilliard and Co, Inc, New York Mills, NY; and at the time of his death, with the Cascade Finishing Co in Oriskany Falls, NY.

He was a graduate of Lowell Evening Textile School.

He is survived by his mother, his wife, two sons, John A of Waterville, NY, (also a member of AATCC), Roger W at home, and two grandchildren.

GENERAL CALENDAR

ACHEMA
June 9-17 (13th International Chemical Engineering Exposition and Congress———Frankfurt am Main, Germany)

AMERICAN ASSOCIATION FOR TEXTILE TECHNOLOGY
Feb 8 (Annual Meeting———Hotel Commodore, New York, NY)

AMERICAN CHEMICAL SOCIETY
Mar 21-30 (139th National Meeting, St Louis, Mo)

AMERICAN COTTON MANUFACTURERS INSTITUTE
Mar 23-25 (12th Annual Meeting, Fontainebleau Hotel, Miami Beach, Fla)

AMERICAN HOME ECONOMICS ASSOCIATION
June 27-30 (52nd Annual Meeting———Cleveland, Ohio)

AMERICAN OIL CHEMISTS' SOCIETY
May 1-3 (34th Annual Meeting, Sheraton-Jefferson Hotel, St Louis, Mo)

AMERICAN SOCIETY FOR QUALITY CONTROL
Feb 16-17 (Eleventh Annual Conference of the Textile and Needle Trades Division———Robert E Lee Hotel, Winston-Salem, NC)

CANADIAN TEXTILE CONFERENCE
Feb 7-9 (Queen Elizabeth Hotel, Montreal, Canada)

CHICAGO SECTION, AMERICAN CHEMICAL SOCIETY
Sept 5-8 (11th National Chemical Exposition———Chicago Amphitheatre, Chicago, Ill)

FIBER SOCIETY
April 27-28 (Spring Meeting———Georgia Center for Continuing Education, Athens, Ga)

INTER-SOCIETY COLOR COUNCIL
April 10-12 (30th Annual Meeting———Sheraton Hotel, Rochester, NY)

INTERNATIONAL TEXTILE MACHINERY EXPOSITION
1962 (3rd Exposition, Hanover, Germany)

KNITTING ARTS EXHIBITION
April 24-28 (Atlantic City Auditorium, Atlantic City, NJ)

NATIONAL COTTON COUNCIL OF AMERICA
Nov 8-9 (1961 Chemical Finishing Conference———Sheraton Park Hotel, Washington, DC); Oct 3-4, 1962 (1962 Chemical Finishing Conference———Sheraton Park Hotel, Washington, DC)

PURDUE INDUSTRIAL WASTE CONFERENCE
May 2-4 (16th Conference———Purdue Memorial Center, Lafayette, Ind)

SCHWEIZERISCHER VEREIN DER CHEMIKER-COLORISTEN
October 12-14 (Symposium on "Permanent Finishing 1961"———Swiss Federal Institute of Technology, Zurich, Switzerland)

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION OF THE UNITED STATES
Jan 10, Feb, 16, Mar 14, Apr 13 (Luncheon Meetings———Palm Terrace Suite, Hotel Roosevelt, New York, NY); May 22-24 (Spring Outing———Skytop Lodge, Skytop, Pa); June 13, Sept 12, Oct 10, Nov 14 (Luncheon Meetings———Palm Terrace Suite, Hotel Roosevelt, New York, NY); Dec 7 (Annual Meeting and Dinner ———Hotel Roosevelt, New York, NY)

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY
Feb 20-23 (46th Annual Meeting———Hotel Commodore, New York, NY)

UNION OF PURE AND APPLIED CHEMISTRY
August 6-12 (18th International Congress of Pure and Applied Chemistry———Montreal, Canada)

WORLD CONGRESS FOR MAN-MADE FIBERS
May 15-18, 1962 (2nd World Congress, London, England)

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LAUREL EMULSIONS

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LAUREL RUXITE A

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LAUREL HYDROWAX HC

. . . especially prepared for tufting yarn producers. Restores rayon, cotton, or blended yarns to proper condition and imparts lubrication for better-running yarns. Easy to apply evenly, it's completely saponifiable for protection in scouring and dyeing.

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LAUREL HYDROCOP and 3B SOFTENER

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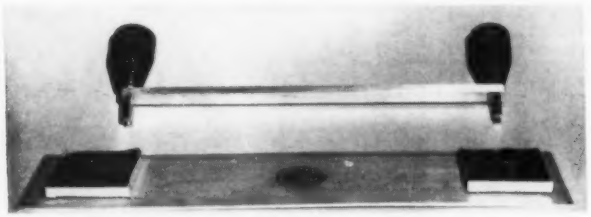
NEW PRODUCTS AND DEVELOPMENTS



BFTB Shrinkage Marking Device

New Shrinkage Marking Device

Better Fabrics Testing Bureau, Inc, 101 West 31st St, New York, NY, is marketing a new stamping device for dimensional change specimens. The instrument consists of a pair of marking dies precision set in an aluminum spacer bar equipped with convenient handles. The instrument is furnished with sets of covered stamp pads mounted on a plate. Conventional marking inks are used in the stamp pads.

The markers are available in 10" and 18" gauge lengths with matched stamp pad fixtures.

The new markers are claimed to provide the maximum in accuracy of spacing and to be exceptionally easy to maintain in a clean working condition.

Additional information is available from BFTB upon request.

●

Color Acceptors for Latex Backings

Latex backings for fabrics can now be dyed the same color as the fabrics, with the same dyestuffs, through a technique developed by Naugatuck Chemical division, United States Rubber Co. Color acceptors are blended into standard latex compounds to modify the compounds so they will accept dyes. A patent has been applied for.

Use of latex compound backings has become a standard practice in the textile industry. The backings give hand, or stiffness, to fabrics used in upholstery. Locking tufts in rugs, providing antiskid and waterproofing are other jobs performed by these rubber compounds.

The backings are applied as the fabric comes from the loom. The rubber coating is then cured by air-drying or in curing ovens, and following this step the latex-backed fabric is dyed. Conventional latex backings however, will not take the dye and remain white or a drab yellow. In loosely woven fabrics this becomes a problem because the latex is visible through the surface of the fabric. Even in tightly woven materials this lack of color in the latex backing is frequently undesirable.

To overcome this disadvantage, some conventional latex backings have a pigment or dyestuff blended into the compound before curing. However, this system is not too practical for separate batches of the pigmented latex compound must be made for each color run.

Use of latex compounds with the blended-in color acceptors reportedly has solved this problem. Compounds containing these ingredients can be colored with standard dyestuffs used on nylon, acetate and other fabrics, it is claimed. In repeated tests, and in production runs, the latex backings are said to have been dyed substantially the same shade as the fabrics.

The color acceptors are now being blended into Lotol compounds produced by Naugatuck Chemical at its Gastonia, NC, compounding plant. The dyeable latex compounds are already being used by several textile manufacturers.

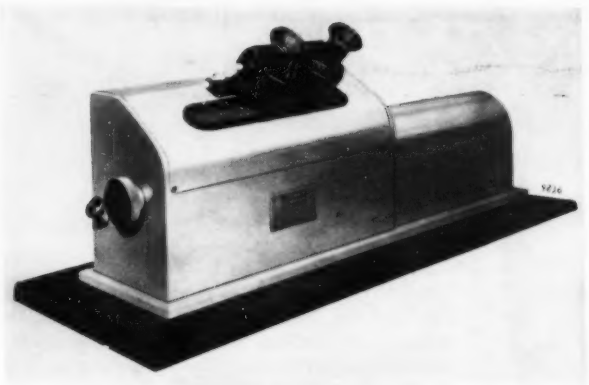
●

Rexobond 46

Rexobond 46, a new weighter finish that is said to possess nonslip properties, has been developed by Emkay Chemical Co, Elizabeth, NJ.

A highly active product in liquid form, the product is said to disperse readily and to be compatible with dye-fixing agents, resins and water repellents. When used with water repellents of the semidurable type, spray ratings are maintained with greatly improved hand, it is claimed.

Samples and working formulas are available from Emkay on request.



Mt Hope Web Viewer

Mount Hope Web Viewer

Visual inspection of moving textiles, printed cloth and other materials while machines are operating at normal production speeds is possible with the Mount Hope Web Viewer, a unique instrument available from Mount Hope Machine Co, Inc, Taunton, Mass.

This precision optical device reportedly provides close-up or full-width examination of materials without interrupting production schedules. Although the viewer seems to stop moving materials, the illusion is created by an oscillating mirror system. As the plain or printed material passes the Web Viewer, the mirror system, which is automatically synchronized to the speed of the range, scans a given section, causing it to appear stationary. As each section passes from the observer's sight, the mirror system returns to the beginning of the stroke and "picks up" visually the next section to be examined.

The Mount Hope Web Viewer may be adjusted to examine patterns of different repeat length. The device is said to permit careful inspection of colors, structure or register. With the mirror system operating at 400 cycles per minute, speeds at which the material may be viewed are determined by multiplying the repeat length by 400. Materials running at speeds up to 1500 feet per minute can be examined in 45" long sections. The retractible 4X binocular permits closer inspection of any local area within the section.

●

Atlas Laboratory Wringer and Padder

Atlas Electric Devices Co, 4114 N Ravenswood Ave, Chicago 13, Ill, recently announced a new laboratory wringer with accessory equipment for padding.

This unit, known as the Model LW-1, provides deadweight loading on neoprene rollers of controlled uniform density rotating at a constant speed to produce uniform reproducible results. The rollers are 2-½" in diameter by 12 long and have a Durometer hardness of 75 ±5 (A scale). Deadweight loading is variable from 5 to 100 lbs. It is motor driven at 9.3 rpm so that the specimens pass through the rolls at a rate of 1.0 ±0/05 inches per second.

Also available for use with the unit are accessories which permit its use as a small laboratory padding unit.

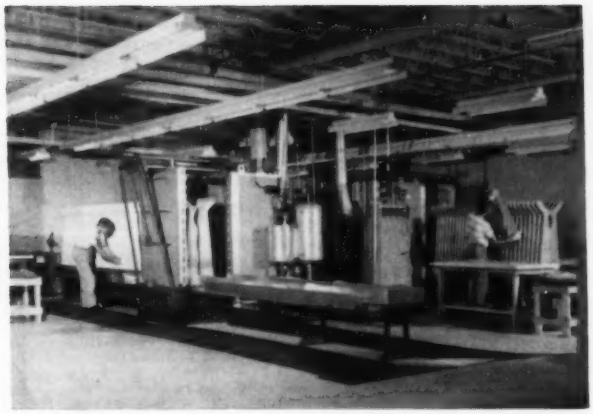
A photo of the unit appears on page 84 of the Dec 12 issue.

●

National Fast Brilliant Crimson RB

National Fast Brilliant Crimson RB, an exclusive acid dye for the textile industry, reportedly produces bright, clear colors from shades of pink to deep carmine on wool, silk, and nylon. Exceptional tinctorial strength, good light-resistance and above average wetfastness are claimed to result when National Fast Brilliant Crimson RB is applied by conventional methods.

This dyestuff is especially recommended by its developer, National Aniline Division, for suitings, dress goods and carpet yarns. For further information, write Department PR 81, Allied Chemical Corp, 40 Rector St, New York 6, NY.



Two Turbo Dye Boarders are shown at Harris-Marshall Hosiery Mills, Inc, Galax, Va. This will be a three-machine installation. The first machine was installed in February, 1960, the second in September, 1960 with the third to follow shortly to take care of the increased production of new seamless hosiery machines. Harris-Marshall, a manufacturer of men's and boys' socks, built a new plant addition for its seamless hosiery operation. Purchase of the Turbo Dye Boarder is said to have eliminated the need for a hosiery dyehouse.

Processing Cycle Cut on Turbo Dye Boarder

Turbo Machine Co, Lansdale, Pa, has announced a 15% to 20% increase in the efficiency of its Turbo Dye Boarder for hosiery dyeing and finishing, by shortening the processing cycle from 8.5 minutes to as low as seven minutes.

The Company has also moved to correlate machine capacity with the speed of the operators by recommending two operators, instead of one, per machine. With two operators, production is said to be 160 to 170 dozen pairs in eight hours, depending on type of hosiery.

Formerly, with the 8.5-minute processing cycle, one operator apparently could not keep up with the machine capacity of 140 dozen pairs in eight hours. Mill studies reportedly showed that production was averaging 80 to 90 dozen pairs in eight hours.

The Turbo Dye Boarder combines the four operations of preboarding, dyeing, postboarding and drying in one operation. The stockings move directly from the greige goods examiner, through the Turbo Dye Boarder, to the pairing department. With fewer dressing and stripping operations, the number of pulls and snags are reduced, it is claimed.

The Turbo Dye Boarder uses 120 hosiery forms. Each operator strips and dresses 30 forms while the other 60 forms are in the cabinet being processed. The cycle begins with presteaming, then the steam-heated dye solution is pressure-sprayed onto the hosiery. The dyeing time and temperature, once established, will repeat from lot to lot. The final setting takes place at a predetermined higher temperature to control the degree of plasticizing in accordance with the manufacturer's requirements. The rinse timer takes over and drain valves open. This is followed by a period of heated air drying before the cabinet opens to deliver the finished stockings.

The dye concentrate, which is mixed with water as it is metered into the chamber, may contain detergent, resin finish, and lubricant as desired.

The Turbo Dye Boarder may be used for combining the four operations or for each of the individual functions.

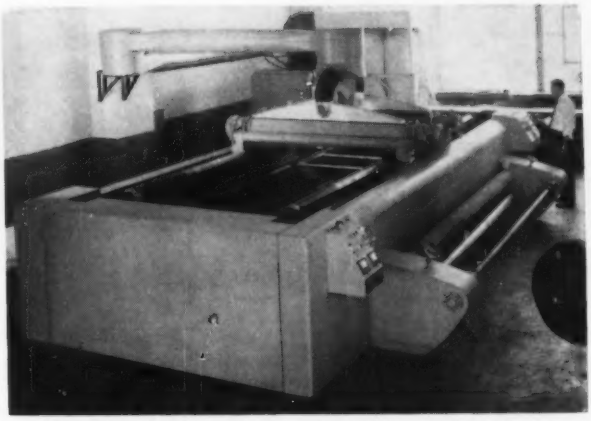
•

Juvenon Soil Retardant No. 6

For the first time, the annoying problem of static electricity in carpeting can be eliminated through the use of one finish, according to claims by American Cyanamid Co's Textile Chemicals Dept.

The finish, Juvenon Soil Retardant No. 6, reportedly has been proven effective in all tests for the elimination of static electricity in rugs.

Said to be particularly effective on wool, the new finish can also be applied to all other natural and synthetic carpeting fabrics.



Demonstrations of the new Cross Shearer for the carpet industry are now being scheduled by Turbo Machine Co, Lansdale, Pa. Since the introduction of the machine at the American Textile Machinery Exhibition in May, 1960, a number of engineering changes were made to increase its efficiency in the shearing of looped and cut pile carpets, backed or unbacked. The machine shears across the carpet width instead of lengthwise, and will handle widths up to 16 feet, 6 inches. It has two shearing heads, one operating in each direction across the carpet. Loops can be sheared in one pass without the extra handling involved in making multiple passes.

Twin-nip Triple-roller Feed for Tufters

The current trend towards making carpets on ⅛" gauge tufting machines, particularly in cut pile constructions, brought with it new problems. On the machines the needles are positioned so close to each other that there is an inevitable tendency to have an increased number of yarn breaks, or if this is to be prevented, yarn qualities have to be substantially better than in the past if tufting efficiencies are to be maintained.

British Tufting Machinery Ltd, Blackburn, England, is building many new ⅛" gauge tufting machines and converting a number of existing machines to this finer gauge. On its latest machine, an 18-ft cut pile unit, it has fitted a radically new form of yarn feed that is expected to raise tufting efficiencies and minimize 'down time'.

The feed consists of a central roller coated with a plastic compound developed to give a high friction value when the yarn is under tension but which does not hold the yarn against it should an end break. This roller is sandwiched between two similar rollers fitted with air cylinders, the purpose of which is to apply a controlled pressure nip. This serves to cold iron the yarn before it enters the tufting needles.

Latex splices are compressed and elongated so that when they reach the tufting needles there is a reduced tendency for breakages to occur. Yarn passes into the first nip from the front, passing behind the plastic-coated roller and emerging from the lower nip.

The nip rollers are pneumatically loaded from each end and there is a quick release on either the upper or lower rollers. As the yarn entries at the top of the unit, there is a danger of the operatives catching their hands in the nip, and to overcome this BTM has incorporated a photo-electric detector motion. If a hand is brought anywhere near the nip the rollers at once separate and the operative has to press a button to re-apply the nip, but this button does not operate if the hand is still obstructing the light beam to the photo cell.

To overcome bowing tendencies, BTM has designed the unit so that it is, on the 18-ft machine, in three sections. This means that there is a firm compression across the full width of the entire yarn sheet, which is divided into three sections before entering the machine's needle bar. The twin-nip triple-roller feed system is an innovation for use specifically with ⅛" gauge tufting machines, but it reportedly can be fitted to virtually any existing tufting machines and it is expected that far greater efficiencies will result from its use.

BTM has built the world's biggest ⅛" gauge cut pile tufting machines, having a tufting width of 18 ft, seven inches.

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